

Foundation FORUM

Opportunities and Challenges in Acquisition and Logistics

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AFA National Symposium

Opportunities and Challenges in Acquisition and Logistics

May 2-3, 1995

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The Aerospace Education Foundation, the non-profit affiliate of the Air Force Association, was established in 1956 to formulate and administer the Association's education outreach programs. Supported through tax-deductible contributions (all donations to AEF are used solely for programs and scholarships), the Foundation sponsors scholarship, technical symposia, educator workshops and contests designed to promote aerospace education and help meet the need for scientific and technological expertise. The Aerospace Education Foundation is a tax-exempt 501 (c)(3) corporation. Tax identification #52-6043929.

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AIR FORCE ASSOCIATION

The Air Force Association (AFA) is an independent veterans' organization whose objective is to promote greater understanding of aerospace and national defense issues. Among the ways AFA disseminates information are publication of *AIR FORCE Magazine*, sponsorship of a series of national symposia, and through educational outreach programs of its affiliate, the Aerospace Education Foundation.

AFA is a grass-roots organization. Total membership is nearly 180,000. There are 350 AFA chapters in the United States and overseas. The Association has 202 Industrial Associates, and its chapters have established ties locally with more than 2,330 businesses in the Community Partner program. The Air Force Association was incorporated in the District of Columbia on February 6, 1946.

AEROSPACE EDUCATION FOUNDATION

Aerospace Education . . . Leading America Into The 21st Century

On May 1, 1956, the Air Force Association established the Aerospace Education Foundation (AEF). The Foundation supports a range of educational and scholarship programs nationwide, which are of special interest to AFA members. As a 501(c)(3) nonprofit organization, all contributions to AEF are tax deductible. AEF educates AFA members and the public about the critical role aerospace development plays in the contemporary world.

In its first year, AEF presented three awards to two civilians and an officer of

the Air Research and Development Command by General Doolittle. In 1957, the first AEF scholarships were established for children of deceased Air Force test pilots. By 1958, AEF sponsored its first national symposium, "The Space Age in Perspective." The history of the Aerospace Education Foundation is a dynamic story of a foundation that identified the needs of the Air Force and the broader needs of the nation's aerospace community, and acted to meet those needs.

- **Scholarship Programs.** AEF annually awards von Karman scholarships to graduating AFROTC students for advanced study in math, science or engineering. Ten annual scholarships are given to outstanding members of the Angel Flight/Silver Wings Society, and for the first time in 1995, ten scholarships will be awarded to Air Force spouses.
- **Eagle Grants.** Approximately 400 grants for undergraduate education are given to outstanding enlisted Air Force graduates of the Community College of the Air Force each year.
- **Visions of Exploration.** Each year more than 50,000 elementary school students participate in this program that encourages interest in math and science.
- **Chapter Aerospace Education Matching Grants.** New for 1995, the Foundation provides matching funds for AFA chapters to initiate new aerospace education programs.
- **Direct Grants to Educators.** Initially available in 1995, AEF provides grants for aerospace education activities by teachers.

R.E. Smith
President, AFA

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Welcome

GENERAL HATCH: *Thank you for coming to our symposium today. I'm Monroe Hatch, the Executive Director of the Air Force Association and the Aerospace Education Foundation. It is a pleasure for me to be at the podium today with our distinguished list of speakers. Before I introduce a number of people in our audience and our speakers, I'd like to ask for a moment of silence to remember the people who perished in the C-21 accident and who are not with us today. There were eight military members aboard including the Assistant Secretary for Acquisition, Clark Fiester, who was scheduled to be with us today as well as Colonel Jack Clark and Major General Glenn Profit. In their memory and the others, let us have a moment of silence. . .*

Thank you and thanks for joining us. This is our third symposium at Dayton. I think it is important that we are here at the seat of Air Force acquisition and logistics. There is a lot on your plate and a lot of people around the country would like to hear about it.

*This year's theme is **Opportunities and Challenges in Acquisition and Logistics**. The theme recognizes that although these are very difficult budget times, there is much important work to do in the field of acquisition and logistics and that means challenges for Wright-Patterson Air Force Base and the Air Force Materiel Command. Your success is important to the Air Force of the future.*

We are indebted to General Yates

[General Ronald W. Yates] for his help and also to General Gene Tattini [Maj. Gen. (select) Eugene L. Tattini] and his team for their cooperation and their support in helping us put this event together. Finally, it is my pleasure to introduce you to our AFA National President, from West Point, Mississippi, Gene Smith.

MR. SMITH: Thank you very much, Monroe. General Yates, thank you very much for inviting us here and for letting us be a part of this, for the help that your staff has given our group in putting on the forum, and especially Gene Tattini.

You, who have attended our series of symposia in Dayton, will recall our first symposium, which saw the election of a new administration. They had been elected on a platform of change and change they did. This year new leadership and faces in Congress promise more change. Most of the change over the last years, from a defense, budget and industry perspective has not been good. It led to significant changes in the companies of the defense industry. The changes led to downsizing. People are now doing different things than they did last month or last year.

Fortunately, though, there are some signs that developments in the near future may be a little bit more positive. Hopefully, most of the downsizing is behind us now, and the title for the symposium this year is **Opportunities and Challenges in Acquisition and**

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Logistics. I'm sure all who work in this area will agree there certainly are significant challenges.

But there is a growing recognition that modernization must be a higher priority in the future and that medium and long-term readiness, as well as readiness in the near-term, must be protected. We hope this means opportunities for growth, not only for doing business, but certainly for success.

There are plenty of challenges for all of us. There always have been and there always will be. Each of our speakers today and tomorrow has a unique perspective on the balance between these opportunities and also with a very significant sense of realism. Symposia such as this one represent a forum for you, both blue suit and industry alike, to tap a tremendous pool of expertise. Take advantage of it. Talk to the speakers during the breaks. Ask questions during the Q&A and let this be an opportunity for you to exchange ideas with the people who are making these decisions. General Yates, again a very big thanks to you for your support and participation.

GENERAL HATCH: *Thank you, Gene. Assisting me on the podium today is Brian Green, who's Chief of Legislative Research and Analysis for AFA. So without further ado, I am pleased to introduce another outstanding Air Force leader, our keynote speaker, the commander of Air Force Materiel Command, General Ronald W. Yates.*

General Ronald W. Yates
Air Force Materiel Command

Opportunities and Challenges in Acquisition and Logistics

Let me start by dividing my comments into two phases. First, let me talk about acquisition then I will talk about sustainability.

There has been a lot of chaos in the acquisition community during recent years. It was not many years ago that we talked about Carlucci initiatives and the Grace Commission and the Packard Blue Ribbon Panel. The Goldwater-Nichols DOD Reorganization Act was in 1986. The Defense Acquisition Work for Improvement Act of 1991 was amended in 1992 and further amended in 1993. There was the 1994 Federal Acquisition Streamlining Act, and this year we had the Roth-Kasich DOD Acquisition Management Reform Act of 1995. We are not in any distress for not having a lot of new ideas.

There are some good things in the Roth-Kasich bill. They encourage multi-year procurement. Most of us think that is a good idea. It allows contracting officers to limit "Best and Final Offers" to the top three bidders. Those who would be in the top three bidders would think it was a good idea. But it puts the focus on a DOD centralized acquisition agency. I'm not just protecting my turf, but we ought to be very concerned about anybody who is talking about a centralized DOD acquisition agency.

To begin with, if you look at what our focus has been since we created the Air Force Materiel Command, we have focused on integrated weapons system

management. We have tried to work that process with integrated product teams. The focus is integration. What is wrong with our system is that it is not integrated enough. When you decide to centralize acquisition, you are separating it from all the other functions that it needs to be integrated with. If you form a centralized acquisition agency, it will not include the support functions, it will not include science and technology, it will not include testers. Most important of all, it will not include the warfighters. That is exactly the wrong thing for us to be thinking about and for us to be doing.

In fact, it builds a gulf between the acquisition agency and the warfighter. If you don't think that is true, the French have been to see me on four different occasions. It wasn't too many years ago when we were in a hot international competition with the French on weapons systems. That is not true anymore. It appears, the French have fallen by the wayside. The purpose of their visit to me was they understood why they fell by the wayside. They said their central acquisition agency does not have a close tie to their warfighters and the warfighting community. So they came to discuss how to forge those ties.

"Since we created the Air Force Materiel Command, we have focused on integrated weapons system management."

First, it's not easy to describe how we do this. This is what makes our business more an art form than a science, but we get it done. We do not throw it over the wall to a ministry of defense agency. If our focus is going to be on integrated product and process development, then this is not the way to go, and you ought to be concerned about it.

"When somebody brings up this idea of a centralized acquisition, the first thing out of our mouths ought to be, 'Well give me an example of when that has been good? Who has that worked for? We're just asking for one example.' I don't have any."

In the short term, it might be easier to lobby, and easier to talk to a small group of people. But in the long term it produces non-competitive equipment. That's not only bad for the warfighting community, it is bad for business. When somebody brings up this idea, the first thing out of our mouths ought to be, "Well give me an example of when that has been good? Who has that worked for? We're just asking for one example." I don't have any.

We are the dominant military power and military equipment producers in the world. It is because we saw this problem. It is not because we turned our back on the problem. The problem is closer integration and we are working it harder. The solution is not to go to centralized acquisition. When an analyst sits down and talks about whether or not to centralize something or to keep it decentralized — whether or not it is acquisition or anything in your company or in your command — centralized will come out on top most of the time because

there is no way to evaluate leadership and teamwork. But of course, we all know that's what makes a difference between the ordinary and the excellent. It is leadership and teamwork. There is no value to it for the analyst. If you personally don't value it — leadership and teamwork between ourselves and industry and between the Air Force acquisition community and warfighters — then "centralized" is the answer for you. But if you do, then it is the wrong answer. That is why I believe that the Roth-Kasich Act, or suggested bill, is fundamentally flawed.

I also want to talk about some positive things going on in terms of acquisition initiatives. One that I talked about in this forum before is called Clear Accountability in Design (CAID). The basic thought here was to delay when the government took control of our various specifications. In other words, to leave the contractor free longer to innovate and also be open to more commercial practices. We are not talking about when the government would take control of the system spec. We do that at the end of the contract, and we are not going to change that. But we are talking about changing the allocated baseline, where we take the system's performance and allocate it down to the engine, to the air frame, and to the radar set, etcetera.

Now we do that right after the preliminary design review. We will do that very late in the EMD process, after the functional configuration audit — much later than we do today. The product baseline, which is really what a lot of people think is built to specs — now we do that in EMD — would be deferred sometime into the delivery of the product. In fact, the only reason for the government to take control of a product baseline is for spares procurement, if you wanted to do that. If you were going to use contractor logistics support, then the

government may never take control of those specifications, which would be fine.

"If you in industry rely on specs and standards, somehow industry is going to have to maintain the specs and standards."

This is an initiative which we worked hard with industry; we worked it hard with the other services; we got everybody to agree on it — industry associations — and we wrote it up into Milspec 499-B. It got caught up in the "no milspec" thing. OSD [Office of the Secretary of Defense] has not been able to figure out how to publish it. It is something that we ought to all push for. You ought to be asking OSD, "We all agree on this, where is it?"

We have talked a lot about specs and standards. This is another initiative which is a good idea and heads toward commercial practices. Don't forget that I said it is a good idea.

Now I want to talk about some things we need to work on together to make sure we actually do this "good idea." This must be a joint project between the services and industry. Last year, I had a meeting with our industry CEOs, and I brought this subject up. I said, "By the way, do you know I am doing away with all of those jobs of people who maintain specs and standards?" If you in industry rely on specs and standards, somehow industry is going to have to maintain the specs and standards. There are an awful lot of milspecs and milstandards that have found their way into commercial products. About 20-25 percent of the specs on the Boeing 777 are milspecs. Those of you in the engine business know it is dominated by military specifications. If we're going to have specs and standards in the industry, the industry is going to have to keep them current.

There is something else we need to

think about. Remember I said we put a product baseline on contract sometime during EMD. Currently, when you produce something, the government has assumed the risk of whether or not the item is going to work. This is the way we do business. If things don't work, we have ECPs. We all are familiar with this process. As we go to performance specs and we put a performance spec on contract, industry assumes the risk. Just a moment ago I was talking about specs and standards. Well, the next question becomes, how are you going to pass a performance spec down to your subcontractor? Do you pass a performance spec down to them? If you do, you are passing along risks to them, too. We haven't answered that question among ourselves — how do we deal with this? In most cases, increased risk to us represents increased cost in a form of some sort of insurance. If we are going to start dealing with each other in performance specs, which I think is the right way, then we are going to have to understand what this means in terms of risk, and we are going to have to understand what it means to our cost performance or prices.

"Why couldn't we have some sort of a system where we certified but didn't have to oversee everything you did?"

Let me talk about another initiative that we started in the command. We are working 21 reengineering initiatives, and I've mentioned just a few to you. A few are pretty powerful. A couple of years ago I was thinking about how we certify your cost and schedule system — your financial system and cost accounting system. We don't tell you exactly what you have to have. We just say that if it meets criteria your system is good enough for us. Why does that have to be limited

to just the financial system? Why can't it apply to a lot of other things that you do, for instance, your system engineering process? Why couldn't we have some sort of a system where we certified but didn't have to oversee everything you did? In other words, if you gave us a product from a certified engineering system, then we wouldn't need people on-site to observe component testing.

"JDAM has offered to take much or almost all of the government oversight off the contractor as long as he is meeting the term of the contract."

That is the germ of my idea. People have worked with this, and have come up with a better answer. Since we are all interested in both process and product, we are going to look for a way for you to bid your processes to us. That would become part of source selection. It would be like we did on the F-22 program — the analogy is integrated program schedules and integrated master plans. You bid them to us, and we don't tell you what to bid; we tell you the outcome. Then, when you bid it to us, we put it on contract.

When you bid your processes to us, we would evaluate them through the source selection process. By the way, it would be like a technical evaluation, except it is greatly expanded. You'd have a group of financial people looking at your financial process. You'd have a group of system engineering people looking at your system engineering process; a group of configuration management people looking at that process. You would compete on these processes, and that would be part of the source selection. We would put that on contract, and we could do away then with a lot of government oversight once we bought the process. You would be responsible for

keeping up the process.

Let me mention a couple of acquisition improvements which are pilot programs. I am just going to mention JDAM [Joint Direct Attack Munition] because they have exciting things in JDAM. JDAM has offered to take much or almost all of the government oversight off the contractor as long as he is meeting the term of the contract. It provides incentives that are over and above financial incentives to the contractor because if he does not meet the terms of the contract, loads of government oversight falls back on the plant. That's innovative!

Let me tell you about something else. Hold onto your socks here. In the JDAM program, it looks as though we will actually pay for performance — to military and civilian employees. This is going to drive a different kind of ownership and different behavior. Already I see different behavior from the JDAM SPO [System Program Office]. They are the only SPO in the command saying, "Don't send us any more people. We don't want to split this pot with greater numbers." In these pilot programs there are a lot of innovative ideas forthcoming.

The truth of the matter is, for the things I've mentioned, and for all of the other good ideas, you have to ask yourself, "How much difference will this make?" It will make it better, but in the scheme of things, how much difference will it really make? Maybe in some ethereal concept of program performance, we are talking about three or four percent — still on the margins. But there is something afoot which can make an order of magnitude change.

OSD is really committed to some basic acquisition reform. Noel Longuemare [Principal Deputy Under Secretary of Defense for Acquisition and Technology] will talk to us later on today.

He is one of the leaders. Paul Kaminski [Under Secretary of Defense for Acquisition and Technology] and of course Secretary Perry [Honorable William J. Perry, Secretary of Defense]. It is one thing to say they are committed to reform. But, if we are committed to only the reform actions which have a marginal impact, it won't make a whole lot of difference in your life or mine.

I want to talk to you about a draft letter in OSD about which I am really excited. I will read you a few paragraphs about a fundamental change in the way the department acquires goods and services. "The concepts of integrated process and product development, and integrated product teams will be implemented throughout the acquisition process to the maximum extent practical." Let me tell you what this means by reading the next paragraph. "The Department's oversight staff will institute a fundamental shift in their roles from sequentially checking on a program six months prior to a milestone decision point to a role of participating early to facilitate program success through continuous teamwork and assistance throughout the acquisition process."

This is extraordinarily different. The basic concepts are: perform as many acquisition functions as possible with minimum oversight and review using IPTs [Integrated Product Team] and a spirit of teamwork with participants empowered and authorized to the maximum extent possible to make commitments for their organizations or functional area they represent; involve key personnel early and encourage timely decision making; and promote flexible tailored approaches to oversight and review based on mutual trust, considering program size, risk and complexity.

Let me tell you what this is saying here. In a DAB [Defense Acquisition Board] review, right now, the rose goes to

the person in the room who can come up with a question, germane or not, that will stump the program director and stop the program. In fact, that is an attitude that permeates everything which is done. It not only happens in the room, it happens throughout the program. If a person doesn't like the program, he can always come up with another study, even though it has been approved 14 times. If he doesn't like it, he can work it on the Hill. Even if working in OSD, he'll go over on the Hill and work it so the budget won't come out right. He will work it with the OSD comptroller. There are a million ways to stop a program. We all have watched it and we know about it.

Now what is this new approach saying? It says, "That's off." Now the rose goes to the guy who is in the DAB room and when the DAB chairman turns to him and says, "Well, Mr. Director of Test and Evaluation do you have any questions." And he says, "No, I don't. All of my questions have been previously addressed before we ever got here." He gets an "A." The guy that says, "I hadn't worked any of this out and here is a stumper for the program director," gets an "F."

"I am really excited about a fundamental change in the way the department acquires goods and services."

In other words, they are saying there must be ownership in OSD for these programs. Somebody must go to the comptroller and say, "Don't cut the program." People in OSD have got to go with the services and support the program over in the Congress, not work against it. These are 30 and 40 percent improvements, not just 3 or 4 percent changes which are the aggregate of these other previous changes come up to be.

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These will change our lives. These will make our programs successful. They will make our programs more model programs because what really permeates cost, schedule and performance ordinarily is outside the purview of the program directors, either industry or government. I am excited about this. A few years ago this would have been seditious in OSD. This is a breath of fresh air and we owe it to the current leadership. We have a chance here, and I am excited about it.

Let me get off of the acquisition horse and talk about sustainment. I am not going to talk about it in the general sense, I am going to focus on one thing: the current issue on privatization. To begin with I am positive about the concept of privatization. Let me tell you why.

I'd say we have completed two-thirds of the civilian drawdown in the Air Force. We have a lot more to do. It is going to be difficult regardless of what would come out of BRAC [Base Realignment and Closure]. Concerning depots, what has tended to be one touchstone that people agreed on during all the debate that has gone on in the last few years is determining how big organic depots should be. Both the DSB [Defense Science Board] and most people in industry and government agree — even in the Roth-Kasich legislation — core work should be done in the services. In the Air Force, core work is close to about 60 percent of our total maintenance dollars. I'm telling you this because as far as the Air Force is concerned, the 60/40 legislation is not a big deal. If you say you are going to do core, it is about 60 percent of the dollar value anyhow, so it is not a big deal.

The reason I am positive about privatization is that I must reduce the people that I have anyhow. I could look to privatizing about another 5 percent or so of the business that we do and take that

out of our depots and give that to industry, which would be a substantive amount of work — about 3 million man-years, and still stay within the 60/40 statutory requirements.

But, while I have a good attitude about it, I am not ready to jump on this bandwagon called privatization until we sort a few things out within the industry and within government. First: We are not on the same frequency when we talk about this. Let me tell you what I mean when I talk about privatization. Privatization applies to a whole spectrum of things. It could apply to base support. It could apply to laboratories. I am focusing on the support business. Specifically, in the support business it means I am going to take work which is in a government depot, take it out of the depot and put it out to industry for industry to bid on competitively without the depot bidding. That is what I mean when I say privatization.

Let me tell you what industry's actions, not words, tell me industry thinks we mean by privatization -- that we are going to take work out of a government depot and give it sole source, without competition, to someone in industry. I'm not interested in that deal. If that is what you mean by privatization, then you are going to find that I will fight you every step of the way. On the other hand, I am positive about my definition of privatization. I am positive about taking work out of the depot and letting industry compete for it.

We are having a problem doing this. Let me tell you what the problem is. The problem is on proprietary data rights. This is not a small deal. This is an absolute, total show stopper. That's why I am telling you that industry is telling me this through their actions. Because, as we try to privatize things, industry is saying, "Not with my data. You cannot put my repair data out for someone else outside

my company to use."

There are two sides to this argument. Let me start by saying I understand your intellectual capital is part of your dearest assets. I think you should be afforded some protection for that, but the question is how much, how long? And, by the way, this is not just a question for the government, this is a question for those of you in industry that you are going to have to resolve before we can go forward with this.

"I am going to take work which is in a government depot, take it out of the depot and put it out to industry for industry to bid on competitively without the depot bidding. That is what I mean when I say privatization."

A few years ago if you had an IBM system and wanted to modify or change your software, you had one choice. You could go to IBM and pay them an arm and a leg to come modify your system. Nobody liked that. A whole different industry grew up because of it. Now, when you buy a software system, you have access to the code so that you can interface it or some other contractor can interface it with another kind of software. If a software guy came along and said to you, "I've got a neat software program, and I am going to sell it to you, but nobody can ever work on it but me," would you buy it? Probably not. Nobody would be interested in that because we all went through that agony before and none of us liked the way it settled on us. But yet, that's what we are saying to ourselves in our industry. Some say, "The data is mine and it is mine forever, and furthermore I am only willing to share it at great cost."

Let me give you the specifics. Not

one contractor, not two, not three, but 'teens of contractors have said "We will not sell you the data for any price." After a year and a half of contentious negotiation, we finally got this down to somewhere between \$60 and \$100 million for 25 year old data in order to privatize it. There is not a problem giving it to the government. We've had it for 25 years. We are trying to make this competitive for other people to bid on. This is my definition of privatization.

Do you think that is right? Is there a limit to this? The time is right for the concept of privatization. We have great success stories. Look what happens when we in fact do privatize something like C-21 maintenance. We saved \$100 million on that, and it wasn't just on the contractors' side, the government changed, too. There were a lot of things we've changed — the period of performance so a guy could amortize his up front investments. Lots of things have changed.

So we are willing to play ball here, but we are not willing to play ball if the deal is "take it out of a government depot and give it sole source to industry." If you are going to charge me \$300 million for data to maintain a small fleet of airplanes, the only people who can compete with you are organic depots. That is the reverse of privatization. We are not happy with the price that we are getting from industry.

"Now, if the software industry can change, why can't we change? Why can't we come up with different standards [for the exchange of data]."

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I am saying I want competition in industry, and industry is coming back and saying to me, "half a billion for the data," then the only viable competition is a government depot and that is not what we want to do—that is not my objective. My objective is to push work into industry. I need help, and the help has to come from you. We cannot get this done on our own.

Now, if the software industry can change, why can't we change? Why can't we come up with different standards. I don't know the right time for the data to be held by the company, but one thing that might be appealing to both of us is that lots of times on new systems we get into the depot systems too early. So I'd be willing to push that off and stay sole source with one guy for contractor logistics support if I knew that in five or six years that the repair data — now I'm talking about the engineering data — gets made available for competition throughout the industry. We are going to always go back to the prime contractor if we have something that has to do with system engineering or extensive mods, I am not talking about the engineering data, I am talking about the repair data. This is something that we must work together on. This is an opportunity. I also think it is a challenge. It is a cultural change in the industry.

Let me tell you that these are, as Gene [Smith] alluded to, these are stressful times for the industry. The only way to survive is if we work together. I've given you a couple of points that we ought to work together on. You ought to vigorously oppose any sort of centralized acquisition agency. It is bad for the nation's defense; it is bad for your business and you ought to be against it.

We ought to find a way to make privatization work. We both need it. You need it. Can't we do this? We are the most innovative industry in the history of this country. Are we so enslaved to a

paradigm of proprietary data that we will destroy ourselves by not being able to break out of it? We've got to be better than that. We need to keep patting OSD on the back and giving them encouragement about integrated product and process development. It is a big swinger in our business and will make our programs more competitive internationally and better in the abstract.

I think the future is ours. There are lots of opportunities. Clearly there are lots of challenges. We ought to hold hands and face them together. We can get this done. Thanks very much.

Question and Answer Session

GENERAL HATCH: *Thank you, General Yates, that was a most comprehensive run down. Clearly, I have received more questions from our audience than we have time for, but after our next speaker we will have a break and possibly General Yates will be available to answer a few more questions during the break. The first question focuses on the BRAC. The Air Force has been criticized for not closing any ALC but partially reducing all of them. What was the rationale for this decision, and do you have any early indications of how the BRAC will approach the issue?*

GENERAL YATES: The rationale is straightforward. You have fundamentally three sources of dollars: force structure, readiness and modernization. In round numbers, it is going to cost you three quarters of a billion to a billion dollars to close a depot, and you must come up with that money out of Air Force TOA [Total Obligor Authority].

We have been reading a lot about readiness. We are on the ragged edge and there is no slack to take money out of readiness. Most people think that force structure has been cut enough. What would you say about modernization? Today's modernization is tomorrow's readiness. I think about it this way. I could be ready to go, and I could have an absolute 100 percent mission capable 35-year-old fighter, but I wouldn't want to go to war in it. Modernization is necessary for us to prevail. Where does the money

come from?

It amounts to taking \$100 million out of Air Force modernization programs. There is no other choice. That is where it comes from. Are you ready to take \$100 million out of the F-22 or C-17 or the few modernization efforts that we have remaining? We are not ready to do that in the Air Force. We thought the best way to go about this is to downsize the depots in place. It still saves the money and does not require the up front investment.

GENERAL HATCH: *Thank you General Yates. The next question addresses contracting out more work -- you talked about 3 million man-years. The current law set 60 percent as in house and 40 percent can go out. What is your definition of core work and which is a key part in that equation? Second, does that mean 5 percent would actually become 45 percent?*

GENERAL YATES: The definition of core work can be debated for a long time. Suffice it to say it is basically defined as those tasks that the government would have to ensure were done in a time of war. We would do those in a government depot. That is a gross simplification, but think about it like that. By the way, it doesn't say, for instance, that if there was a task on a hundred air planes, you would require all 100 to be done in a government depot. Maybe 40 or 50 could be done in a government depot and the rest could be

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privatized. But, fundamentally think about it that way.

You could get down to about 60 percent of the dollar value of the maintenance being done at Air Force depots and that is equal to "core," within a few percentage points. Today we are at about 65 percent. The rest could be privatized. That equates to around 3 million man-years work.

GENERAL HATCH: *Our third question from our audience is on science and technology. Are you satisfied with the level of effort in the Air Force budget for science and technology?*

GENERAL YATES: I am not satisfied with the level for anything in the Air Force budget, but given the other trade-offs which I talked about, I feel it is about right. I think there has been strong advocacy within the Air Force and OSD for science and technology. I wouldn't push for a greater slice in science and technology. I think it is appropriate, given the level of the current budget.

GENERAL HATCH: *Thank you Ron. The next question concerns the test and evaluation community. How do you see them fitting into your future acquisition programs and will T&E become more or less important?*

GENERAL YATES: Obviously, test and evaluation plays a critical role in what we do now.

There are lots of ways in which we can improve. I, for one, think we need to be careful about how much independence you put into test and evaluation. Don't misinterpret what I am saying. There is a place for independence and an objective look at what you are doing in test and evaluation. But you can take this thing too far. This is something we look at every day. You can take it to the point where the independent evaluator will not accept other government test data or contractor test data. You can waste a lot of money on this, and you can come up

with test scenarios which the operational user says have no operational significance. That's too much independence. We are coming to more balance in approaches. That doesn't say it is more or less important. It says it is more mature.

One of the other things that I am looking at is trying to better integrate — remember the theme of the first part of my talk was integration — the test community into the ongoing program even more so than they have been in the past. I am also looking to get the test community more of a direct feed into the science and technology laboratories. If you are not careful, you will not have the kind of test equipment to test the next technology that we bring along in a weapons system. In other words, you must bring the tests along with it. Some of that, by the way, we see in today's high-cycle fatigue problems on engines. We really don't have the right test technology to look at some of these things. We can improve it, Monroe, and I don't see a dramatic change in its involvement.

GENERAL HATCH: *Thank you Ron. Next is a question on personnel reductions. As commander of Air Force Materiel Command, you are the primary supervisor for many civilians and military men and women. If the current budgets hold, when do you see the stabilization of the personnel drawdown?*

GENERAL YATES: The military side is stable now. Civilians will be stable by the turn of the century. We will continue to drawdown for the next five years. Since 1989, we've drawn down our command by 25 percent and we're on the way to about 34 percent. What remains is the civilian side.

GENERAL HATCH: *As a final question, you did speak in part to the Federal Acquisition Streamlining Act from last year, but how will the implementation of that law affect Air Force Materiel Command?*

GENERAL YATES: The law did some good things, but we would all have to objectively say it is a start. It has an impact on what we do at the base level. It is all positive. Therefore, it is good, but it is not a big deal in major weapon system acquisition where I think the impact is minor.

GENERAL HATCH: *Thank you very much General Yates for being our keynote speaker and getting us off to a great start.*

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Mr. Harry C. Stonecipher
President and Chief Executive Officer
McDonnell Douglas Corporation

Surviving The Peace: Defense Strategy for the Post-Cold War Era

Everywhere I go in groups like this, whether it is industry or DOD, when I get back, there is always someone who says, "What was the mood of the group? Was it down? Was it somber? Was it dull? Was it dead?" I never quite understand the question. I couldn't be more excited about where we are today.

When I agreed to take on the task at McDonnell Douglas, I took a very close look at what the future holds for a company that is really fundamentally in the defense business. When I look at our products, I think it is pretty darn good. What are facing right now, though? We're talking about change. Dr. Warren Bennis, former President of the University of Cincinnati but now out in California, has written a lot on the subject of leadership and he has written a lot on the subject of change. He said, "We all see and understand the need for change and we instinctively avoid it at all costs." I think he is probably right.

I have a great friend in another company who is 73 years old, and he likes to play 36 holes of golf a day, is very active, and has been a good counselor to me through part of my career because he is ultraconservative, and I don't happen to be. But one morning as we sat down to breakfast, I said, "I see you are having something different for breakfast this morning." He says, "no, they brought the wrong thing." True to form over all the years I've known him, he had eaten raisin bran with banana sliced on the side for

breakfast. When I thought some change was taking place, he said, "Harry, over my many years in industry, I've seen a lot of change. I hated every one of them."

We can't fall into that situation. John Lennon, of Beatles fame, once said, "Life is what happens to you while you're making other plans." That is pretty much the way it is. There is no better example of that than losing a job, especially when it is a job you've held for your entire working life. That is what happened to you in the U.S. Air Force, and that is what happened to us in the defense industry. Each of us is out of a particular job — that highly specialized and particular job of doing something to counter-act the threat posed by the Soviet Union. As institutions shaped by common experience, we are, both of us, aging "baby boomers" forced to pound the pavement for the first time in our career.

Today I'd like to talk about how we at McDonnell Douglas are going about the job of finding a new job in the post-Cold War era.

It is my thesis that with the end of the Cold War will come a real revolution in military thinking and strategy and a parallel revolution in the thinking and strategy of companies that remain a part of the defense industry. In each case, it is a revolution in the old sense of the word — a rotation, to a return to first principles. As you know, the U.S. Air Force was established as an independent service through the National Security Act of 1947

— the same act, incidentally, which established the CIA. Supporters of an autonomous Air Force argued that it could serve an independent mission in attacking the enemy's military power rather than merely supporting ground or naval forces. At the same time, U.S. policy-makers came to see the development of an air-atomic power as the least costly means of minimizing the Soviet threat. Nobody expected or wanted a large, permanent peacetime army following World War II. "Having air power," General Marshall observed, "will be the quickest remedy."

Nobody expected or wanted a large, permanent peacetime army following World War II. "Having air power," General Marshall observed, "will be the quickest remedy."

Within a year of its creation, the Air Force proved its worth in a way that no one — not even Harry Truman or General Marshall — would have predicted. The service that was set up to deliver nuclear bombs instead delivered groceries to the besieged city of Berlin for a period of a year and two months. The Berlin Airlift was one of the watershed moments in world history. By removing the need for sending tanks into Russian-occupied East Germany, the airlift may well have prevented the onset of World War III. Without a doubt, it provided an inspiring example of the willingness and the ability of the United States to come to the aid of friends and allies in distant places. It showed that the United States was not going to play the role of a nuclear couch potato in world affairs.

In several senses, we have come full circle in today's defense environment. First, we must accept the fact that the call

to bring troops home and reduce military spending is politically irresistible in today's environment, just as it was in the years following World War II.

At the same time, we cannot delude ourselves into thinking that we've achieved peace in our time. One set of dangers has replaced another — as it did half a century ago when communism replaced fascism as the major threat to world peace. While the great risk of all-out nuclear war has receded, we are now faced with the violent reality of increasing ethnic and religious strife in different parts of the world. The spread of sophisticated weaponry, including nuclear armaments and delivery systems, casts a dark shadow over the future security of all nations, including ours. There is a great deal of work to be done in building a stable, global peace.

That brings up a final parallel between the world of 1947/48 and the world of today. Caught between a rock and a whirlpool — between the juxtaposed realities of tightened U.S. defense budgets and swirling global tensions — U.S. policymakers have been forced to improvise. They have been and are looking for new ways to project force — in a rapid and effective manner — while making deep cuts across the whole U.S. force structure.

Over the past five or six years, the U.S. Armed Forces have been nothing short of brilliant in accommodating this need for improvisation. Having lost the full-time job of counteracting the Soviet Union, you have demonstrated extraordinary versatility and competence in handling a wide variety of difficult and demanding part-time jobs, which have run the gamut from humanitarian relief, to peacekeeping, to full scale conflicts like Desert Shield and Desert Storm.

"One set of dangers has replaced another — as it did half a century ago when communism replaced fascism as the major threat to world peace."

Few people outside the military realize how busy you have been. Only recently, for instance, you surpassed the tonnage figures for the Berlin Airlift in transporting goods and materials into war-torn countries of the old Yugoslavia. In fact, America's military forces have been involved in more operations of greater duration than at any time since the end of the Vietnam War. These operations have been conducted with 25 percent less total forces and 40 percent fewer forward deployed forces than the services possessed in 1989.

In learning to do more with less, the Air Force — and indeed all the services — have returned to the first principles. These include a renewed emphasis on the fundamentals of:

- leadership and training,
- quick response,
- mobility,
- interservice cooperation with coalition partners as well as our own service, and
- economy of force in the dual sense of precision and low cost.

We in the defense industry have much to learn from you in responding to change. Though the industry has shrunk, there are many people who believe it is still possible to go on doing the same old things in the same old way.

To assure you that we in McDonnell Douglas recognize that change is imperative, there are three points that I want to stress today.

First, we as a company are prepared to take new risks and invest more of our own money as part of a commitment to

excel in defense contracting. We are not going to run for the hills as many others have done. In the years ahead, we want to expand our relationship with the Air Force — and indeed, with all of the Services. We like this business and the position we hold in both new and established programs.

Second, we know we have to do a better job in driving down costs and raising quality. McDonnell Douglas is going to be the industry leader on both counts.

Third, we recognize the need for internal organizational change based on some new thinking about our goals and missions as an industry.

One of the unfortunate legacies of the Cold War era is the lingering notion within the defense industry that if something costs X dollars this year, it should cost X plus Y dollars next year, given inflation and the unusual product enhancements that get injected. We have been a "performance-driven" industry. What this means is that people in the industry have tended to equate extra performance with one or two — or perhaps even three — times extra increments in cost. Imagine, where the computer industry would be today with the same philosophy.

"Few people outside the military realize how busy you have been. . . . In fact, America's military forces have been involved in more operations of greater duration than at any time since the end of the Vietnam War."

"Nevertheless, a quiet revolution within the defense industry is destined to sweep the legacy of cost plus thinking aside. It involves return to one of the first principles of any business — which is never to lose sight of offering your customer higher quality and better value."

Nevertheless, a quiet revolution within the defense industry is destined to sweep the legacy of cost-plus thinking aside. It involves return to one of the first principles of any business — which is never to lose sight of offering your customer higher quality and better value.

Since joining McDonnell Douglas last September, I have spent a considerable amount of time with the managers of different programs hammering home one fundamental message: If you are building a product that costs X, then next year it must cost X minus Y dollars, and even less the following year. In other words, zero contribution for inflation, zero premium for class II product improvements, if I can use that term. We have to stop running to you for money every time we see a change coming down the road.

The first few times I delivered that message, an awful lot of program managers looked at me and said, "Well, he just dropped in from outer space, and it will take him a while to catch up." I've been in this business 40 years. I didn't just drop in from some place. After seven months, I have not changed my mind. I gave this same message to another group two months ago, and I have a lot of program managers who have changed their thinking — about 180 degrees.

Beginning this year, we have tied our incentive program for our government aerospace executives to affordability. Their success or lack of success in meeting ambitious cost reduction targets will change their bonuses by plus or minus 33 percent. I found out, as General Yates [General Ronald W. Yates] reported awhile ago, when you talk about money, it concentrates the mind on the pocket book.

In our drive to reduce costs, we've already reaped many of the benefits of downsizing — of getting rid of things we don't need and making sure that we don't employ one person more than we need to get the job done. Now we have to get smarter and more creative — as you've learned to do in increasing operational effectiveness in the face of the same severe cutbacks. As you know, you cannot accomplish a quantum leap forward in productivity of your own organization without doing things better. You have to do things differently. You just can't do them better. They have to be done differently.

Aerospace engineers like to boast of the hundreds of thousands of parts and the miles and miles of wiring that go into the making of an aircraft. They take great pride in the complexity of the product.

"All other things being equal, the more complex the product, the harder it is to develop, to build, to operate and to maintain. That is why we are doing everything we can right now to reduce complexity — to reduce the parts count and promote ease of manufacture and assembly."

That is absolutely the wrong attitude. We have to understand that, all other things being equal, the more complex the product, the harder it is to develop, to build, to operate and to maintain. That is why we are doing everything we can right now to reduce complexity—to reduce the parts count and promote ease of manufacture and assembly. Our F/A-18 E/F, for example, is substantially bigger and better than earlier models of the Hornet, but it has one-third fewer structural parts.

Our R&D activities are similarly focused not just on advanced technologies, but on advanced design and manufacturing processes that will lead to improved product affordability. Under an Air Force contract, for instance, we are developing a composite tail for the C-17 at the "Phantom Works," which is our advanced R&D facility. The experimental tail is designed to provide some eye-popping numbers: Reducing parts 80 percent, fasteners by 78 percent, weight by 20 percent and cost by 50 percent. Lots of the times when we approached these composite programs, we ended up saving a lot of weight and no cost. This program is aimed at saving weight and cost.

In other projects at the Phantom Works, we are going even farther in attacking the high cost of manufacturing and assembly by molding and gluing together whole sections of aircraft that are all one piece, with no rivets and no fasteners. With the help of computers and laser tracking mechanisms for mapping every centimeter (or part of a centimeter) of surface area, engineers and technicians at the Phantom Works have designed wooden molds for creating large structural parts made entirely of composite materials.

Speaking as the head of one large defense contractor, I don't wish to rail against the real or imagined evils of excessive government oversight and

regulation of the defense industry. That is not out of tact. General Yates was right on target earlier. You should understand that government—including all of the Services—has been more sinned against, than sinning, in this regard, especially in the recent past. Too often, defense companies have acted like caged birds—refusing to venture out, even though the door is open. I see lots of opportunities to come forward and make a real change in the way we do business together.

That may have happened in the past at McDonnell Douglas, but it is not going to happen that way in the future. We are going to take advantage of every opportunity we see for adopting best practices in our government businesses. We are doing that right now in work we are doing on such programs as JAST [Joint Advanced Strike Technology] and JDAM [Joint Direct Attack Munition].

"We are going even further in attacking the high cost of manufacturing and assembly by molding and gluing together whole sections of aircraft that are all one piece, with no rivets and no fasteners."

You've seen what we've accomplished to date with our Delta Clipper Experimental Program. A single-stage-to-orbit vehicle, it took just 22 months from a clean sheet of paper to a flying prototype. This program is a prime example of the use of concurrent engineering and rapid prototyping in a low-cost, low-overhead environment. That vehicle is scheduled to fly again on May 16. This program is a prime example of what we really can do, and it puts us in an excellent position to compete for the sorely needed next generation program—the development of a replacement for

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the Space Shuttle.

The C-17 is probably the greatest single example of where we, as a company, have been willing to take risks and put our own money on the line in order to demonstrate our long-term commitment to being a leader in the defense industry. That program saw some real trouble and it would have been very easy for us to fall back and deny the services of a wonderful product and ourselves of a wonderful business. I think all the right things were done to save that program and bring it on line. As someone said yesterday, "It is beginning to look like a model program."

We like hearing that. I hope you give me some credit for waiting this long to put in a plug for the C-17, but no good salesman could resist the temptation any longer. Now that we have a fleet of 14 C-17s in service at Charleston Air Force Base [S.C.], the Air Force, your team, is doing a much better job of selling this airplane than we could ever do. It is generally recognized that the C-17 is really key to the whole concept of rapid deployment of U.S. and allied forces in a world of multiple, regional instabilities.

I know you need and desire substantially more C-17s than the 40 to which the government is now committed. In no uncertain terms, you've already told me what we need to do to help bring that about. We must reduce unit costs per aircraft — affordability. That is exactly what we've done over the past several months and will continue to do over the coming months. In the past year, we've reduced the unit costs per aircraft by \$29 million. Twenty-nine million dollars is not nearly enough and we'll continue from there.

Let me close by reciting one of General Fogleman's [General Ronald R. Fogleman] favorite quotes: "Victory smiles upon those who anticipate changes in the character of warfare." In Desert

Storm and a succession of other recent operations, victory has smiled not once, but several times on U.S. Armed Forces. I congratulate you on doing a superb job in preparing yourself for life after the Cold War.

Rather than skulking in your tents or your quarters following the fall of the Berlin Wall, you have given the United States the continued capability to project force and to play an active role in keeping the peace and delivering humanitarian relief in a dangerous and uncertain world. You have made up for a huge reduction in resources by lifting your performance to a new and higher level. In my world, which is defense contracting, I believe that victory will smile upon those who are quick to respond to the most pressing needs of the customers. In the future, we will be redoubling our efforts to give you the best weapons systems and equipment and services at the most affordable prices.

Thank you very much for inviting me.

Mr. Harry C. Stonecipher
President and Chief Executive Officer
McDonnell Douglas Corporation

Question and Answer Session

GENERAL HATCH: *Thank you Harry for some very interesting remarks. You answered a lot of questions when you decided to tackle the C-17 up front. Later this month, the Air Force-industry team will receive the Collier Trophy for the C-17. A number of people in this audience will enjoy being at that event, and I hope to see you there.*

MR. STONECIPHER: I will be there. It is on the 12th.

GENERAL HATCH: *You didn't speak about F-15Es. It has been noted that if the Air Force had more money, one possibility is for additional F-15Es. How long is that procurement option available at reasonable cost?*

MR. STONECIPHER: I think a procurement option became available cheaper than it might have been because, as many of you are aware, the Saudi and the Israeli buy reopened the line. The first Saudi F-15 is moving down the line as we speak and the join of fuselage or rollout takes place about the 19th of this month. So the line is open. I don't mention that at functions like this. We know the F-15 is a favorite of some sectors of the Air Force, but we also know that you have many priorities. We are not fooling with those priorities, we are trying to be responsive and have available what you need. But the F-15 is available at a very reasonable price.

GENERAL HATCH: *Thank you Mr. Stonecipher. Back to the C-17 and a future decision to buy more than 40, what*

do you estimate is the best and most efficient annual production rate?

MR. STONECIPHER: The most efficient production rate is probably on the order of 10 going to 12 going to 15 aircraft because that is what the factory is tooled for. I don't think it is a matter of getting to that level, but certainly that would be the most efficient. It comes back to a question of what can you afford to buy per year with all the priorities you have in the Air Force. So, I think we have shown data to the should-cost team, which General Scofield [Lt. Gen. Richard M. Scofield] headed up, which has shown all the parameters for different production rates.

GENERAL HATCH: *Thank you. Would you comment on General Yates' definition of privatization and giving industry an opportunity to compete?*

MR. STONECIPHER: I am glad that question came up. I wrote some notes and I started to address the issue at the beginning of my speech because I've heard an awful lot of conversation about General Yates' position on depot maintenance.

I learned something by listening to him speak today because it is not the understanding that prevails in industry today — that really is going to compete it across industry. The perception is that industry is going to compete with the depots. That's where most of the rhetoric is taking place. I agree with you that we should be able to solve this problem.

Certainly, we always think our data rights are worth a lot more than most people do. So, we should be able to solve that problem.

GENERAL HATCH: *Regarding last year's acquisition reform legislation, how do you view that impact from an industry perspective?*

MR. STONECIPHER: I think General Yates stated it accurately. I don't think it will make much of a difference. I am seeing more individual cases on individual programs where we are able to handle a different type of a program. There are pilot programs going on — JDAM is certainly one that we like very much. There is another program we are bidding on where our board approved stock incentive plans for the key people working on that program. These are fundamental, direct engineering-type people. They were told if they win that program, here is the number of shares you'd get, and if you are one of the down-select, you get another batch. That's the first time we've done it. It is the first time any one has done it that I've worked for.

We think there are all types of innovative ways to change the way we are doing business together. We are not really restrained by regulation as much as we think we are. The regulations themselves are pretty broad and have lots of room to work in. General Marsh [General Robert T. Marsh] is here. He and I worked on a task force together, and we learned an awful lot about what you can and can't do if you put your mind to it. But, we have to have mutual trust and be sure that we are trying to do the right thing for the end program -- which is giving us a way to fight war.

GENERAL HATCH: *The next question from the audience is a perennial question, and it talks about DOD audit and oversight of defense programs. How does that look from your perspective today? Is it changing? Is it about right or*

too much?

MR. STONECIPHER: My perspective goes back to my previous job because I haven't been on this one long enough to see how many were there a year ago and how many are there today. On the subject of oversight, I am one of the few people who says very bluntly that government is doing a better job of evaluating that than industry is. I worked for a guy named Jack Welch at GE for a long time and when he came in and took lots of people out of corporate headquarters, he said, "I've taken away all the people that were asking the questions. Have you taken out the people who were answering?" The answer is "no." I pointed out the other day the same type of conversation with Dr. Kaminski [Honorable Paul G. Kaminski, Under Secretary of Defense for Acquisition and Technology].

I pointed out that we make a big thing about oversight and the number of people required for oversight between the government and the contractor. If you look inside at all of the conversations going on, we have the DCAA [Defense Contract Audit Agency], the SPO [System Program Office] and the DLA [Defense Logistics Agency]. We really have those three plus the contractor. If you look at it from the vantage point of the DPRO [Defense Plant Representative Office], he really has about three or four people he is trying to deal with.

We have a lot of cost items in there. We ought to be able to solve all of that. What I'm saying is that it is not just the contractor and the government. There are some other players in it.

GENERAL HATCH: *Thank you. You mentioned the Single-Stage-to-Orbit program. How would you assess the technical prospects and ultimate affordability of this SSTS vehicle?*

MR. STONECIPHER: I believe the technology is there. It is a matter of

how fast we get there, which will depend on what priority we put on it as a spending habit. Everyone knows industry is probably going to have to pony up a big chunk of money to play in this game, too, so I think government and industry are going to have to decide how much that is worth to us.

GENERAL HATCH: *The next speaker will be Mr. Longuemare and this is your chance to ask him about acquisition reforms and which ones you are pushing and things that you'd like to see on his desk.*

MR. STONECIPHER: I don't have any acquisition reforms that I am pushing onto his desk or anyone else's. I am spending most of my time trying to reform our company. So I am going to have to depend on you to reform the government. Thank you.

GENERAL HATCH: *Thank you for being with us today Mr. Stonecipher. You are an excellent spokesman for our aerospace industry.*

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The Honorable R. Noel Longuemare, Jr.

*Principal Deputy Under Secretary of Defense for
Acquisition and Technology*

Acquisition Reform: Window of Opportunity

Thank you very much and good afternoon. I must say it is good to come out and have an opportunity to talk to people like you all and I am looking forward to a few questions. But it is also good to sense the mood that Harry [Harry C. Stonecipher, McDonnell Douglas] talked about. I have to agree, both in DOD and particularly in mixes with industry, there is very much of an upbeat mood. But I think there is also a mood of perhaps some inquisitiveness. Everyone is wondering what is going to happen. I'd like to talk about where we are going today. You are probably not going to hear anything at all new, but perhaps if you hear it from me, it will at least tell you where we are going from a DOD perspective.

I'd like to just briefly talk about some of our problems, our opportunities, give you a little progress report about where we are, talk about some of our priorities and give you some thoughts toward this whole endeavor we are involved in.

The title of this talk was "window of opportunity." The reason I wanted to use that phrase was that I do believe we are at a unique confluence of time right now — of being able to have a substantial impact on the way we do business, a substantial way we can change a process of interaction among the DOD, the whole Defense Department and the defense industry, and work to address the problems of the future.

We certainly have a need to make these changes. You've heard some of them

already today. A lot of the tools needed to make this change are in place. I don't think there is any doubt we have a major commitment on the part of all the leadership in the department and we have already made some moves toward some of these changes.

Given that, the real question is: "Are we going to be able to sustain this momentum? Are we going to be able to stay the course?"

The DOD Acquisition Problem

- **The Threat Has Changed**
- **Force Structure Has Been Downsized**
- **We've Been Living Off Inventory**
- **Logistics Costs are Eating Our Lunch**

*We now have to recapitalize/modernize
or risk losing our dominant advantage*

Let's talk a little bit about the specific problem the acquisition community faces. You are well aware of the world situation changes; the threat has been reduced. General Yates pointed out the Air Force has reduced not only military personnel, but also the civilian side. The overall force structure of the Armed Forces is down between 30 and 35 percent. As a consequence of this reduction, we have a large inventory built up that was procured in order to sustain a much larger force. That has allowed some cushion to tide us over during this time of substantial budget reduction. As you know, the amount of money we are putting into the procurement

accounts right now — into the investment accounts — is at an all-time low. It turns out — surprisingly enough — though, the average age of our equipment has been almost flat over the last several years even though we have not been buying nearly so many platforms or new pieces of equipment. The primary reason is the services have been very adroitly eliminating a lot of the older pieces of equipment. So the average age tends to stay constant.

But come 1997, we are going to be at the bottom of the barrel. There is going to be a major problem in being able to keep this up. We've succeeded — I'm talking primarily about the U.S. military — primarily through the use of innovative new technology as compared to superior quantities. That has been the whole thesis and philosophy for a number of years. It has worked beautifully.

One of the things we must do is to sustain that trend. We cannot allow the technical superiority of our forces to be downgraded. So, that must be a number one priority.

One of the problems we face in looking at all the various ways to spend the Defense budget is the logistics costs are looming as a larger and larger fraction of the total. In the acquisition community, we tend to think primarily of the front-end acquisition cost, but if you look at the average weapon system, between 60 and 80 percent of the total cost spent is actually in the support area. This is an area that needs a tremendous amount of attention.

Given that, we do need to come to grips with this problem of finding a way to recapitalize, and to remodernize our forces, but to do so with very much smaller budgets.

Everybody in industry is familiar with the old hockey stick chart where profits are not very good today, but they are going to go up in the future. That is the exact shape of our investment accounts in

the current budget projections. In OSD [Office of the Secretary of Defense], we believe the likelihood of that actually happening is not very high. Look at what happened just recently in the Congress during the debate over the Emergency Supplemental. There was a request for relief for a \$2.6 billion expense to pay for all the extraordinary things like Bosnia, Somalia and all these various contingency operations. The response of the Congress as reported in *The Washington Post* was that DOD received a \$3.1 billion budget increase. That was the headline in the paper. If you look at what actually happened, less than \$500 million or so was obtained from others areas in the government. Of the \$2.6 billion we needed, \$2.1 billion was obtained by taking money out of other Defense programs through the reprogramming and redefining process to pay for the Emergency Supplemental. Congress has taken it out of one pocket and put it into the other. This is a harbinger of things to come. It would be unwise for us to assume we are going to get some tremendous relief and a large influx of new money.

That does set the sobering problem before us. That is what I would call the bad news. The good news is there are ways we can adjust to this problem.

The Tools are Available

- New Management Philosophies
- Information Technology
- Manufacturing Technology
- Logistics Technologies
- A Better Educated & Informed Workforce

I mentioned the tools we need to address the changes are available. Drucker, Duran, and Deming came up with the new management philosophy a number of years ago. There is a lesson to be learned here. Although the United States came up with these ideas, the reality is we did

not put those into effect. Japan did. Now we are very much in a catch up mode. I'm happy to mention — I'm sure Harry Stonecipher and others will agree — American industry has really caught on and we are doing a wonderful job now with these new management philosophies.

In the information technology area, the United States is leading the world. We have a substantial advantage there. The real question is, "are we going to do the same thing there?" Are we going to take advantage of our lead and implement that in terms of our processes? The same thing is true of manufacturing. Most enlightened industry now understands that. We are making great progress there. There are new innovations in logistics. We are trying very hard to push total asset visibility — the use of information technology to understand where things are, what is needed and be able to get that information around. But the single most important factor of all is we have the best educated, and frankly, highly motivated workforce available to do this job. We have what is needed in order to address this problem.

I mentioned the leadership being committed. Certainly Secretary Perry [Honorable William J. Perry, Secretary of Defense] is very much behind this. We had a PEO/SYSCOM [Program Executive Office/System Command] conference back in February, and I'd like to thank General Yates as he spent two full days with us. The conference was to address issues very much along the lines we are talking about here to come to grips with how we actually go about making changes. Secretary Perry came and spent the better part of two hours with us. He not only talked, but most interestingly, instead of just answering questions, he ended up asking a lot of questions. He asked the audience for their view on various things. He not only asked questions, but he also listened.

We are now taking action to respond to some of the recommendations that were made. There is no question there is top level support. John Deutch [Honorable John M. Deutch, then-Deputy Secretary of Defense] is the same way. My boss, Paul Kaminski [Honorable Paul G. Kaminski, Under Secretary of Defense for Acquisition and Technology], is very committed to this. We refer to the service acquisition executives as the "dream team." They are a tremendously committed group, working very closely together between all the services and with the DOD and the OSD. It is with real concern that I acknowledge the most untimely and tragic death of Clark Fiester [Honorable Clark G. Fiester, Assistant Secretary of the Air Force for Acquisition] two weeks ago. Clark was not only a good friend, but he was a wonderful individual. The country, and particularly the Air Force, have lost a tremendous supporter. We are all very saddened by this, but we are going to take the legacy Clark started and make sure we continue to move out on it. Clark was at the very forefront, in a very quiet way, of pushing some major changes to the great benefit of the U.S. Air Force and our Department.

Let me talk just a little bit about the things that relate to ways to address this funding problem. Where are the areas we can address that will have the greatest payoff? I believe there are four areas.

Where are the Biggest Payoffs?

- **Elimination of Non-value-added Functions & Processes**
- **Maximizing Joint Programs & Joint Service Usage**
- **Cutting the Logistics Tail & Inventory**
- **Implementing Cost as an Independent Variable**

The first one is talked about the most — the elimination of non-value added functions. This is the so-called narrow

definition of acquisition reform — getting rid of the oversight and unnecessary things that are associated with that. As you probably know, Coopers and Lybrand just finished a study a couple of months ago. They surveyed 10 different companies and concluded there was an average of 18 percent extra costs associated with just doing the things those 10 companies did to sell goods to the government compared to selling products in the commercial market. That understates the problem. I believe it is substantially higher than that, probably on the order of 20 percent or so.

Another area that doesn't get talked about nearly as much as it should be is the increased use of cross servicing, joint programs, and the usage of joint equipment. From where I sit, I see what goes on in all of the services and it is quite clear, especially if you looked in the past, there are numerous areas of duplication where each service has been solving the same problems slightly differently. We pay the same nonrecurring costs over and over. Instead of having the same product available across the board, we have each service having a unique logistics support tail. This type of thing can multiply.

Having said that, let me hasten to point out there is a clear need for the service differences. Each service has a certain personality and has a different mission to perform. That is very key. But there are many areas, especially in the areas of sub-systems and various things of that nature where there is absolutely no reason there needs to be a difference. Electronics is one major sector where that can play.

Third, is the one I've already mentioned about logistics — cross servicing. We can do a great deal more in modernizing the way we handle our logistics by taking advantage of the electronic information explosion, the exploitation of the CALS type systems, which, by the way, we are having some real success in that,

finally. There are some major payoffs happening there. There are major improvements that can be made by using electronic information technology to understand where the assets are, determine what is needed, what their condition is, and how many are required in certain locations.

Cost as an Independent Variable

- **Performance Penalties are Generally Small to Non-existent**
- **Overall Result is Generally Better**
- **Attention to Life Cycle Cost is Needed**
- **Cost Reduction is a Never-ending Opportunity (Contractors should be Highly Incentivized throughout Program Life)**
- **To be Successful, Cost must be a Threshold Requirement, not "One of the Herd"**

Finally, the area I believe has the largest likelihood of paying off is what I call "treating costs as an independent variable." I can't tell you, Harry, how delighted I was to hear you talking about applying that at McDonnell Douglas. I know it is being looked at by all of the enlightened industry. I'd like to talk just a little more about this one point because I think it is so powerful and so important.

There is a general feeling if you focus on costs, you are going to end up with second rate equipment. I think that is absolutely false. If you look at the commercial world, that is not true at all. If you look at many of the instances where we have tried this in a few cases in the DOD arena, we've ended up very well. People talk about the so-called 80 percent solution. That is a misnomer. It is more like a 95 percent solution. The amount of performance trade-off you often have to make is either very small to nonexistent. In general, quite often the results are better. If you think about it for a moment, if you have a piece of equipment that has fewer parts in it, it is probably going to be more

reliable. If you make it easier to build, it will be easier to maintain. All of these things are of great benefit to the military. By and large the performance requirements are not magic points in space, but they tend to be a fairly broad optimum that if you can come within a certain ballpark, you can achieve the needs of the military. The benefits there are incontrovertible.

We have to focus on not just the acquisition costs, but the life cycle costs — the attention to logistics concerns and maintainability. Cost reductions should be a never ending process. Right now our contractual structure tends not to encourage that. In fact, they encourage just the opposite, except for value engineering, which for some reason, is not used nearly enough.

One of the other factors, which there is a lot of debate about, people say we should make cost one of the parameters to be traded off. That is incorrect. Cost has to be, or price really, should be set as "Here's what is affordable. We have a fixed budget; we can afford so much for this system. Here's what it is. Now let's go design the needed capability." One thing we must not do is exceed that price. It can be done and we can achieve, in my view, two-to-one cost reductions in the equipment we buy compared to our historical record. I submit to you a two-to-one reduction in the cost of our equipment can have a major impact on the defense budget.

We had a Defense Manufacturing Council meeting back in late last year. We came up with five paradigm shifts that relate to how one would go about doing this. The first bullet is probably the most important of all of these in terms of the change in process. That is to shift away from the oversight police action approach to one of incentives across the board. We were talking about that just before we came in here, about ways one can incentivize people to get rid of milspecs,

for example, but then find some reason why having done that will cause some improvement in the cost of the program.

Right now, our contractual structures don't do anything but disincentivize the process. If you remove milspecs, the first things some of our procurement people want to do is say, "now that we've reduced your requirements, let's figure out how much money you're going to give back." There is some merit to that, but we need to find a way that it is a win-win situation. There is no reason why we shouldn't be able to share half of that saving with industry. If you can do that, everybody wins.

ACQUISITION REFORM: A WINDOW OF OPPORTUNITY

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5 Key Paradigm Shifts

- | <u>From</u> | <u>To</u> |
|--|---------------------------------|
| • Regulation/Enforcement -----
<i>Apply Across the Board</i> | ▶ Incentives |
| • Stovepiped Program Phases -----
<i>Heavy Emphasis on Producibility Supportability</i> | ▶ Agile IPPD |
| • Cookbook Program Management --
<i>Every Program a Pilot</i> | ▶ Disciplined Innovation |
| • Stovepiped Oversight -----
<i>Facilitating Success, not Fault Finding</i> | ▶ IPTs |
| • Performance at Any Price ---- | ▶ Max Performance for the Price |

Our acquisition phases have been typical stovepipe functions. We go through the various parts of the major programs from Concept Development to DEM/VAL [Demonstration and Validation] to EMD [Engineering and Manufacturing Development] and to Production. Each one is treated separately. If you look inside industry, the approach in the past has been first you do engineering and after engineering is done, they give manufacturing the problem and then they give it to logistics people. IPPD [Integrated Planned Product Development], as General Yates pointed out, is a tremendously

powerful thing. We need to adopt that across the board. We need to have a much greater emphasis on front-end supportability, and front-end manufacturability to make this succeed.

We need to also get away from the idea of reading the manual as to how we manage the programs, and empower the program manager to use disciplined innovation in order to tailor things to do what makes sense. We have some pilot programs with which you are familiar. These are formal programs where we relaxed some of the regulations and statutory requirements in certain cases in order to see what could be done.

But there is no reason why every program should not be treated as a pilot and be pushed to the greatest extent that is allowable by law to incorporate these innovations. Any of you who are familiar with our recent DAB [Defense Acquisition Board] programs, knows that is what we are doing — we are pushing to the hilt to open the doors and allow appropriate changes to a particular program. Finally, instead of focusing on performance, we need to focus on the price.

I'd like also to tell you the train has left the station. We are no longer talking only about doing things in the future, but we have started this process and there are a substantial number of things that are already in process. Not that there aren't tremendously more things to be done, but we have an integrated plan where we are working throughout the life cycle of the equipment.

We're Moving

■ We have an Integrated Plan

- Acquisition Reform throughout the Life Cycle
- Defense Manufacturing Council — Implementation Facilitator
- Communicate — Talk & Listen — Then Act

■ We want to develop Plan Ownership

- Talk & Listen
- Take Action on Recommendations & Proposals

■ We have accomplished Things

We've formed a Defense Manufacturing Council to address these issues. We are trying to communicate and listen as much as possible to ideas. The important thing is that we really are listening and trying to incorporate these suggestions into the way we do business.

We have accomplished a number of things that I'd like to just touch on. We recently had the ATACMS [Army Tactical Missile System] go through. As you know from your past experience, instead of a stack of requirements, we went through an 8-page performance spec, and an 11-page statement of work. More pertinent to the Air Force, a space-based infrared system just went through not long ago. It had a 34-page, single acquisition management plan. That was the entire paperwork for that process through the DAB, as compared to literally something that was over an inch and a half thick in the past.

So we have indeed taken seriously this idea of streamlining. Dr. Perry came out with his initiative last year — removing milspecs and encouraging reform across the board. We have the Federal Acquisition Streamlining Act [FASA] of 1994 that has passed. We are just in the final processes of submitting the legislation for the FASA II. Although FASA I did not provide everything we wanted, it was a tremendous step in the right direction because it gave us great flexibility to imple-

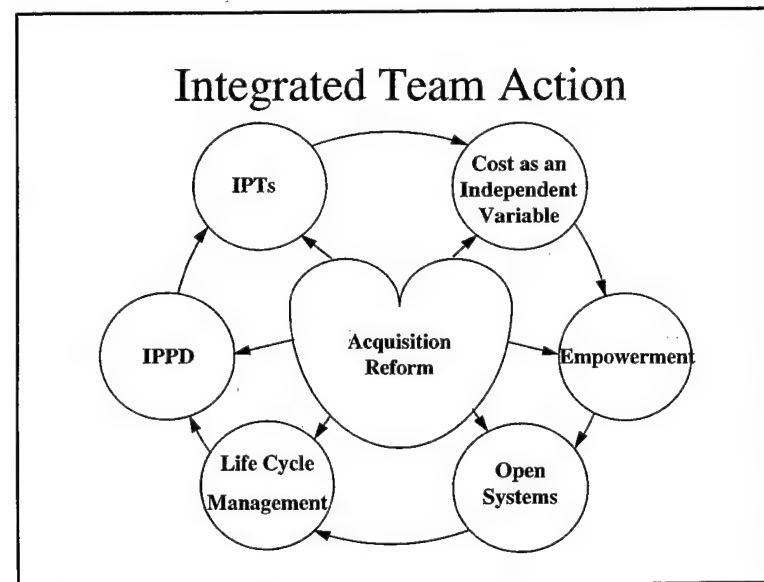
ment many of the things that need to be done. By and large, the vast majority of the changes that need to be made are now totally in our court. We no longer can say it is because of Congress that we can't do this. Most of it is in our court and we are going to move as fast as we can to implement the changes.

I mentioned about the pilot programs and the idea of having pilot-like programs where we like to encourage everybody in the acquisition community to be innovative. You will get a receptive ear to these ideas of change. We are pushing very hard to delegate authority down the line to the SAEs [Service Acquisition Executive]. And also, I am very proud of the fact that we have just recently reengineered the DAB process. We are getting away from the idea of grading the programs. We are going to get OSD involved in the very beginning because the people there do have, believe it or not, something to contribute. There are some very smart people who understand what is needed to get a program approved. This also relates to some of the political aspects of getting it through Congress. If that is the case, why don't we have those inputs in the very beginning, so the program can be structured properly so by the time it gets to the DAB, it is a non-event, as compared to the way it used to be, which was an inquisition and quite often found the program wasn't structured right. And you sent it back to do it over.

We are looking at the COEA [Cost and Operational Effectiveness Analysis] process, trying to make that more relevant. In particular, people would undoubtedly agree we are bending over backwards to cooperate with industry. It is quite clear the only way this is going to work is to have the government in industry working hand in glove to jointly solve our mutual problems. That is a very important aspect of this process, and I am glad we have the same thing happening from industry.

My perception is that part is working extremely well right now.

OSD is by far not the only place things are happening. All of the services are working very hard in this area. The Air Force has done an exemplary job in jumping on this bandwagon. In fact, we are trying to adopt many of the things you people have innovated here as part of our process, and adapt them to overall needs. There is a great deal going on here in all quarters. The key to this whole thing, however, is to take all of these actions and work them as a team. Integrated process team approach, which we are using for our DAB now, is the key to the whole concept. If we can work this as a team, jointly share our problems, jointly figure out solutions and do this in a cooperative manner, that will be by far the best answer to this.



In acquisition reform, like in a helicopter — or better yet, an aircraft — all the parts that are moving are connected to each other. That's most of the time. When they don't get connected to each other, bad things happen. That just reinforces my point on teamwork. I posed the question at the very beginning as to whether or not we would be able to stay this course. In the time I've been at OSD and particu-

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larly in seeing what is happening, not just in the Pentagon, but more importantly, outside the Pentagon — the way everybody is recognizing the problem, jumping on board to innovatively work this — I am frankly optimistic we will be able to succeed.

One problem is the leadership in the Pentagon is going to change much more rapidly than the time costs of the system we are trying to change. So it is awfully important we find ways to institutionalize these improvements in such a way they tend to transcend the particular leadership that is involved. That is why it is so important for everybody in this room, people in the Air Force as well as people in industry, to really grab hold and institutionalize this so after people like myself move on, we have a lasting capability here to do what has to be done.

I've thoroughly enjoyed speaking with you here and I'll take a few questions.

The Honorable R. Noel Longuemare, Jr.
Principal Deputy Under Secretary of Defense for
Acquisition and Technology

Question and Answer Session

GENERAL HATCH: *Thank you Mr. Longuemare. I'll try and combine three or four questions from our audience. Earlier, General Yates gave us his views on the Roth-Kasich legislation. Where are we headed in the centralization of DOD acquisition?*

MR. LONGUEMARE: I cannot give you an authoritative Department view on the subject because I don't think one has been formally put together yet. I will just give you my view, which I think reasonably resonates with the views of others I've talked with about this. I personally think it would be a big mistake to have a gigantic centralized acquisition system. We've all learned that the Russian approach isn't too good. Centralized decision processes just aren't the way to go. We need to find ways to go in the opposite direction. We need to decentralize and shove the decision processes down as far as possible. We need to move in that direction.

OSD has a very important role to play to normalize things across the board, but if we can just maintain the cooperative environment that exists right now between OSD and the services and among the various services, that is the way to go. I believe this is the way we are going to go. I would certainly hate to see some move toward a centralized organization.

GENERAL HATCH: *Thank you. I don't think the next question is particularly focused on acquisition, but it is a good question for an OSD official. What*

is your opinion about the National Security Committee Chairman, Representative Floyd D. Spence, proposing to save dollars by cutting back on the size of the OSD staff?

MR. LONGUEMARE: I think all of us in the Department would applaud the idea of cutting down on the civilian workforce. Our overhead is way out of balance. Right now we don't have a workable mechanism to make this happen. Any of you who are familiar with the civil service rules — I am a neophyte to this because I was frankly shocked when I came from industry — know how hard it is to do things you do every day in industry. A RIF [Reduction in Force] is the last thing you want to do under current rules because it is strictly based on a seniority system. You would end up sending out all of the new young blood. So that is not a good approach.

We are trying very hard with incentives and attrition to address this problem. You will find DOD leadership would be very much in tune with practical ways to address this problem and if legislation would enable this, I suspect we would be in favor of it.

GENERAL HATCH: *Thank you. What will be the impact of Mr. Deutch's departure to head the CIA and how will that affect Defense acquisition?*

MR. LONGUEMARE: That is a TBD question. John Deutch has been an incredible pillar of strength, innovation, and dynamism in pulling the Department

together. He has done a terrific job. However, because of the way the Department is now working, the problem of pulling this together has now passed us. We will be able to weather that storm quite well. One of the pluses is having John over at CIA. It will make it much easier for a closer coupling to occur between the intelligence community and the needs of DOD — particularly some of the information gathering that is needed by the warfighter. We are in the process of standing up a new space organization which is going to address part of that problem, but having John in CIA will help immeasurably in getting the intelligence agency to be much more relevant to the needs of the warfighter.

GENERAL HATCH: *Thank you. What is the status of plans establishing departmental performance measures, or metrics, to achieve acquisition reform goals?*

MR. LONGUEMARE: We have a team that is going to provide a report in just a few weeks. I've forgotten the exact date, but it is a metrics team that will recommend what type of metrics should be used for measuring these items. Any of us who have been involved in trying to create change understand that in order to do this, you must have a way to understand where you are, where you going and what you are doing relevant to the plan.

By the way, I'll just sidetrack a minute on that. In the Pentagon, I have discovered there are large sectors that don't understand what it is to have a schedule with milestones and a need for accomplishment. I am very serious about that. A number of the groups think as long as you diligently work on the problem and have a method for satisfying Congress, the budget that is being provided is satisfactory, and that constitutes the result. Having metrics, along with a plan that can be measured, is somewhat new in certain areas. It is going to be very healthy and

very necessary to do that.

GENERAL HATCH: *Thank you Mr. Longuemare. You've mentioned acquisition reform pilot programs. Last year's programs have not seemed to generate the cost savings we had all hoped for. What do you see on the horizon?*

MR. LONGUEMARE: I am not sure I would agree with that comment. JDAM is one of the pilot programs. I think it is a terrific program, and the jury is still out. It is going to open a lot of eyes, and I believe the pilot programs are going to be quite successful.

GENERAL HATCH: *Thank you. Last year's legislation did not relieve the Department of Defense of many of the small business and related set aside requirements. Will the next round of reforms address these areas?*

MR. LONGUEMARE: In that area, we are basically following the statutes. We are merely following what is required of us by Congress. The whole affirmative action area is being looked at right now. It would be presumptuous of me to make any assumptions as to what the President might decide in these areas. We are going to follow whatever the law of the land is and try to do the best job we can.

GENERAL HATCH: *Our final question for Mr. Longuemare concerns the balance between force structure, readiness and modernization. There is concern about the shortfall in modernization accounts. How do you see OSD's perspective for the budget years beyond 1996?*

MR. LONGUEMARE: As I tried to indicate during the other part of the talk, right now there is a focus on readiness. I doubt if anybody would argue with the importance of having our troops able to respond, having a good place to live, and having adequate means to do the job they have to do right now. Through the little leeway we have, we could afford to slow

down the procurement budgets and the investment accounts, take the money and put it into readiness. This was a conscious decision the Secretary made, and I believe most people agree that was, under the circumstances, a wise move. Having said that, we do have this problem looming before us, and I am not optimistic we are going to get large increases in the budget. The solution is not to ask for more money. The solution is to figure out what we are going to have to work with, and innovatively figure out how to modernize and keep ourselves technologically ahead.

As General Yates said, today's modernization is tomorrow's readiness. We understand that. There is no question the Department is grappling with this problem. But it is going to require not just the DOD but it is going to require a lot of help from people in our audience to make this a success.

It would be extremely good if we are able to get more money out of Congress, but we are not planning on that. We are going to try to work this problem in such a way that we are more realistic in expectations.

GENERAL HATCH: *Thank you very much for being with us here today, Mr. Longuemare.*

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Managing C⁴I as a System of Systems

I will start with a trick question for you. Is this a system of systems that you are looking at right here? Does anybody want to venture an opinion? How about the next one? Is this a system of systems? The answer is, "It depends upon how big your field of view is."

When I was the Air Force program director for AMRAAM [Advanced Medium-Range Air-to-Air Missile], my view of the F-15 was that it was not a system of systems because it was a nice airplane, and they hadn't paid any attention to integrating a pretty little missile that doubled survivability and lethality. We had a difficult job working the integration problems as a system of systems.

If you take the AWACS by itself, it is not a system of systems — unless you are the guy doing the integration on the airplane. If your field of view is narrow enough, you can say, that indeed is a system of systems. You combine the AWACS with the F-15 and you put a little broader field of view on your scope and now you've got a different kind of systems of systems, but it is still not the broad world system of systems. Today, I am going to talk about system of systems and I really want to talk about interoperability.

Mr. Stonecipher, I really like your words on the C-17s since part of my body is in your airplane. But, when I arrived at Hanscom [AFB, Mass.] on December 1, 1993, it became clear that as we returned forces from Europe and moved to a CONUS-based system we were going to de-



MORE POWER!



- It Is No Longer Possible for the Warfighter to Bring All That He Needs to the Theatre
 - Systems Are Becoming More Interdependent
 - The Need for Current Information Is Ever Increasing
 - Many Sources
- ESC'S Systems Are Becoming Highly Dependent on:
 - High Speed Reliable Comm
 - Reachback Capability Using COTS-Based Comm
 - High Bandwidth
- Simply Having Comm Available Will Not Solve the Problem
 - Systems Must Be Able to Connect To many Others
 - Systems Must Be Able to Exchange Useful Information
 - Systems must interoperate!!!

pend more and more upon information flow and our systems were becoming more interdependent.

We could give you high speed reliable COMM [communications]; we could give you some capability using commercial off-the-shelf stuff to do some reach back, which was becoming more and more important; but, it was also clear that just simply having COMM wasn't going to be enough and we need to do something else. So we started taking a look at what the world was like and here is a notional or theoretical overall architecture of tactical interoperability.

The C4I Tactical Interoperability Challenge

Building a Flexible C4I System of Systems

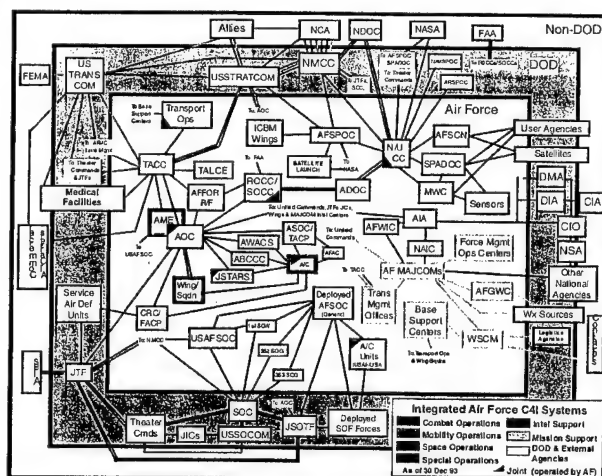
The diagram illustrates a complex network of military assets and their interconnections, organized into four main functional areas:

- Intelligence:** Includes assets like UHF, Rivet Joint, U2R, JIC, and JTF. These are connected to a central hub labeled 'C4I'.
- Communication:** Includes assets like UHF, SHF, pUp, and pUp. These are connected to a central hub labeled 'C4I'.
- Surveillance:** Includes assets like JIC, JTF, Wing Squadron, ASOC, TAC, CMC/VAC, and Army AB. These are connected to a central hub labeled 'C4I'.
- Command and Control:** Includes assets like UHF, SHF, pUp, and pUp. These are connected to a central hub labeled 'C4I'.

The diagram is signed 'TRI-AC' in the bottom left corner.



Integrated Air Force C⁴I Systems

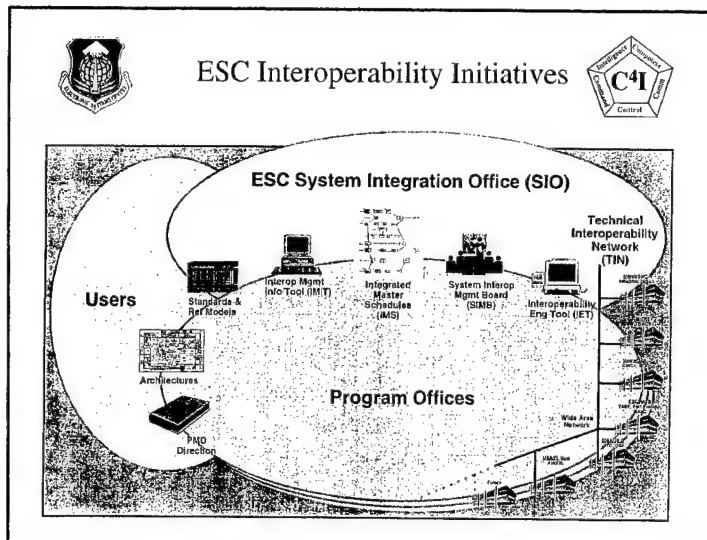


We boil it down to a nice architecture in that picture, and we know all that stuff is linked together, right? Well, the answer is obviously not.

We have embarked on doing this and what we told them was, I was going to create a czar for interoperability. We call it the System Integration Office and this czar was going to be the clearing house for interoperability. Part of his function is to ensure that even on PEO programs, if there are changes that went in, we are taking a vision on interoperability and we will ensure we are doing the things on interoperability to make that first cartoon come true.

That was a brash thing to say because I don't believe we fully understood how many things you have to work. The Interoperability Office has been in existence now for 14 months. Over that time, we have built this concept up that it says we've got to get some direction — not so much for us, because we are going to move out on this whether we've got direction or not — in order to give the program director some coverage and change the level of attention to the issue. We had to get some direction into the PMDs so there was a latch there to go work things. The Air Staff has agreed to put into the PMDs a piece of the direction that covers interoperability.

We said, "Obviously we need to have an architecture," and General O'Berry [Lt. Gen. Carl G. O'Berry] had kind of laid out an architecture already. We started working with that and then we said, "OK, let's do a data check on standards."



But I want to start with standards. When we went and looked at standards, there were a whole bunch of them out there. There are some standards that cut across all the services. Others apply within an individual service — so there is a standard with which people can comply. It means at least the Air Force can talk to the Air Force, but it can't talk to the Navy and vice versa. At times there wasn't a standard, so nobody can talk to anybody with any great assurance. We found a disaster, in our opinion, in the standards area, but it gave us some things to work against. We are now trying to work these areas of architectures and standards so at least for the ESC programs, we have something where we can do interoperability.

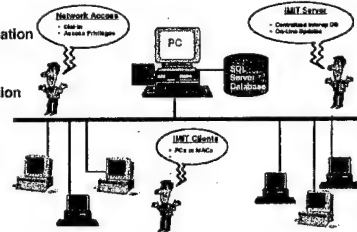
In the process of working the tools, we found it's not a simple process. This is a system that is made up of 16 systems and there are 16 times 16 interfaces that you've got to go worry about. We typically don't think in those terms.



Interoperability Management Information Tool (IMIT)



- **Purpose**
 - Interface mgmt across organizations
 - Interoperability information common view
 - Call systems Interface Information summary
 - Interoperability issues prioritization
 - Interoperability issue resolution tracking
- **Information**
 - Systems/OPFACs
 - Interfaces
 - Issues and actions
 - Schedules
 - POCS/OPRs
 - Documents and standards references
- **Benefits**
 - Inter/Intra-service Interoperability evaluation
 - Migration system interface evolution
 - GCCS compatibility assessment



Evolving Warfighter Interoperability Matrix

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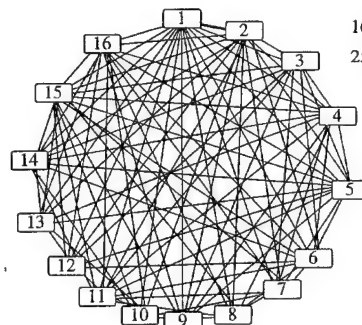
The Data Interoperability Problem

The Interface Explosion



CTAPS
WCCS
JOTS
ASAS
STACCS
MCS

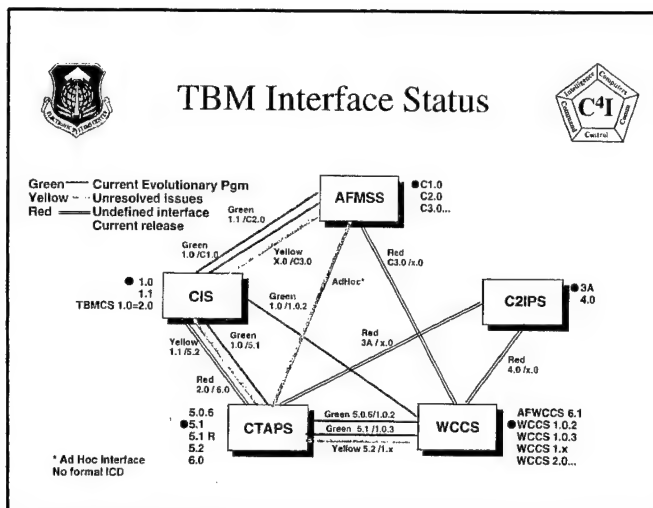
16 Systems
256 Interfaces



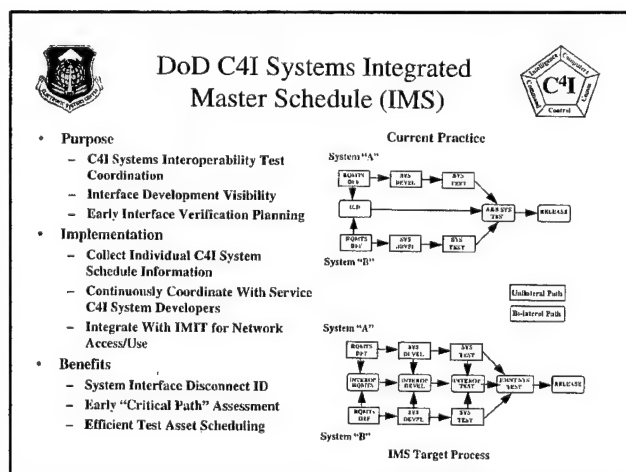
Each line Represents a Pair of AD-HOC Message Interfaces.

As we started to go build the tools, we started to map the interfaces and then to assess the health of those interfaces. By doing this we start finding early on where we have issues where we've really got to work. Without putting an interoperability scope on, we would only go work these stovepipe programs. Once we fielded a system, that is when you find that — son of a gun — they didn't work. Those things that are currently in the evolutionary phase have good definition, no interoperability problems. In others, for example AFMSS — the mission planning system interfacing with the Combat Intel System, we found another version of software coming, and it's not clean and we have some issues that need to be worked. It is like a critical path diagram, it tells you you've got to pay some attention to it.

Between the Combat Intel System and the Contingency Theater Automated Planning System, right now we are okay, but for the next version of the software, we've got some issues and the version after that, we've got some things we don't have the foggiest idea how to solve. You really need to put the fire brigade on this. For the Command and Control Information Planning System which is supposed to link with the Contingency Theater Automated Planning System, it turns out the software versions don't talk to the Wing-level Command and Control System, and they don't talk to the Contingency Theater Automated Planning System. So before you go too far, you have a chance to work the problems. We are doing that.



As we started to flow out schedules and look at the way interop-erability was worked on schedules, we found there is an initial flash of brilliance where we talk interface control documents — early on in programs we'd do this. Then, as we go through those programs, and they start to get out of phase from a schedule standpoint, we start losing the rigor of working in the systems development area — the multitude of interfaces that we have to work. When we finally get down to the end-to-end check, we find once again we've got a disconnect. Our proposal and what we are working to at Electronic Systems Center is now we are mapping all that and in fact, it is a continuous feed-back on interoperability as we go along.

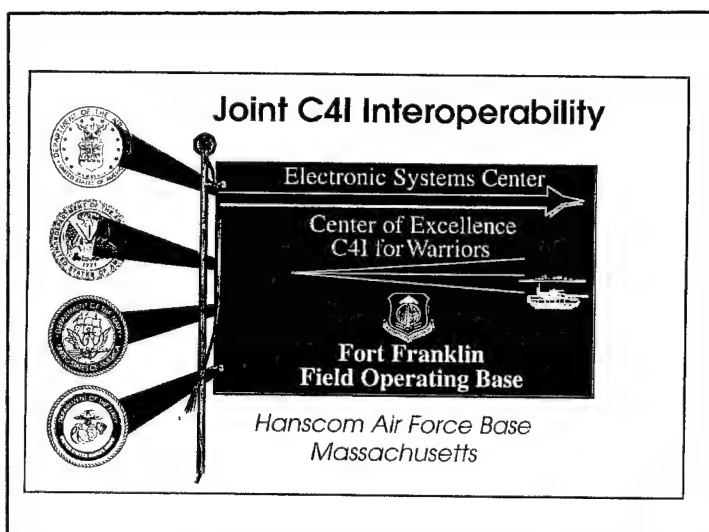
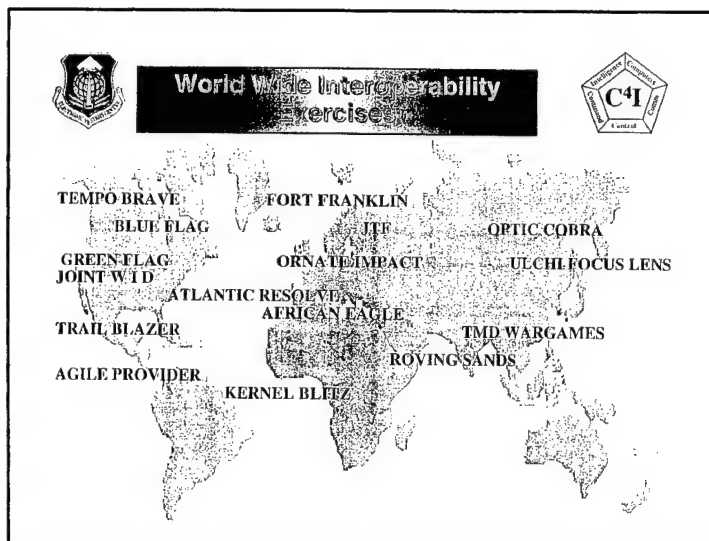


OPPORTUNITIES AND CHALLENGES IN ACQUISITION AND LOGISTICS

We found also that we really needed to touch the users a lot more, because a good place to touch the users is putting equipment out in the field during exercises. We have catalogued where all the exercises are going on over the next year. Some of the users really aren't too keen on having people come in with equipment that their troops currently don't have. So, for those exercises we can't get involved in, we need a different vehicle.

We created an encampment at Hanscom. I did not name it Fort Franklin, even though General Yates claims I did. Originally, we created that encampment for very selfish reasons.

As communicators we aren't communicating. We had a helluva time communicating with people about the importance of C⁴I. So we created an encampment to put people into an environment where they could see what would happen when you had good connectivity and good information in your battlespace, and when you didn't. We started out as an educational tool and have gone from a demonstration to a working encampment. What we are doing now is focusing on interoperability.



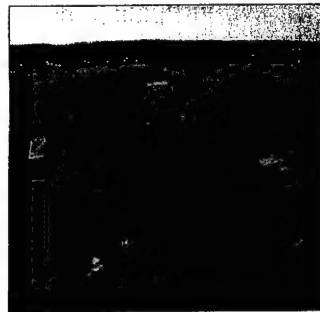
As we are talking, we have a field encampment going on. It is going on until the 17th of May and we are inviting industry up the 15th and 16th to go through this exercise. The emphasis today is not on educating and training, but it is to get into interoperability. This is the third time we've done this. We have now received approval to be the joint forces air component commander for the JWID 95 exercise. We are working this.

It has all of the elements that an Air Force operation would have. To try to get some jointness in here, we went to National Defense University and got them to participate. They are co-sponsoring this with us, and they have laid out some scenarios. In parallel with this, we are doing some C⁴I training and we are demonstrating some advanced technology.

When we talk encampment, we really are taking the folks out of the offices, putting them in shelters and tents out in the field.



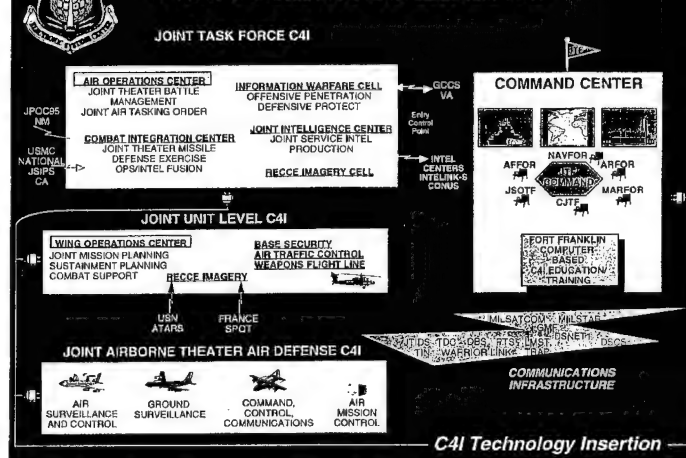
Fort Franklin Interoperability for the Warrior



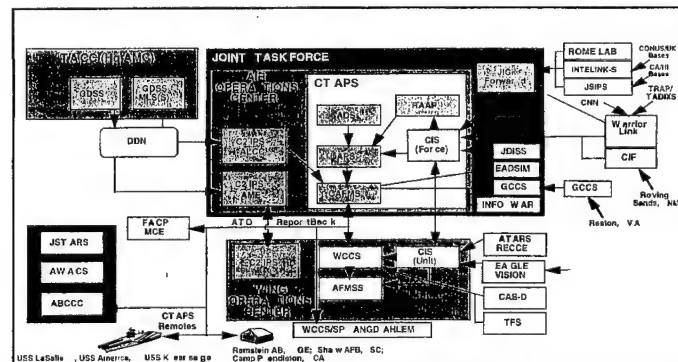
- Purpose
 - To deploy integrated C4I systems to educate/train and test/evaluate interoperability
- Accomplishments
 - Two deployments conducted in 1994
 - Fort Franklin III planned for 28 Apr - 17 May
 - Fort Franklin IV will play a major role in JWID 95
 - Interoperability and technology infusion activities are major themes



Fort Franklin III Enclaves



FORT FRANKLIN III INTERNAL INTERFACES

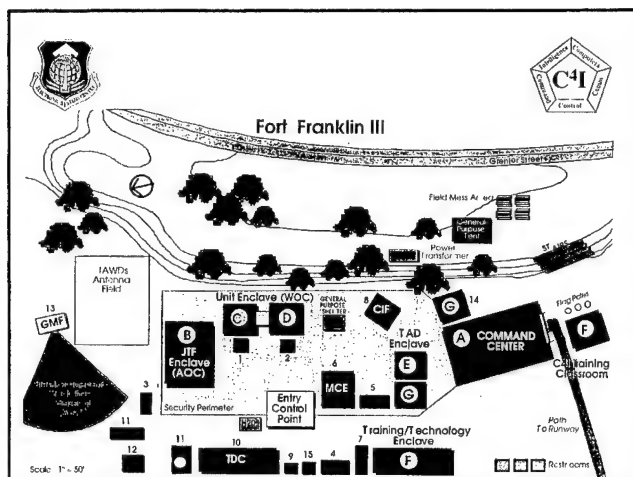


Within that enclave, there are 105 systems that we are linking together. If we were to have full Navy and Army participation, that number would probably go to 350. So the little ball chart that had all the strings across it, take 105 and if you square that you're going to get a number like 10,000 interconnects.

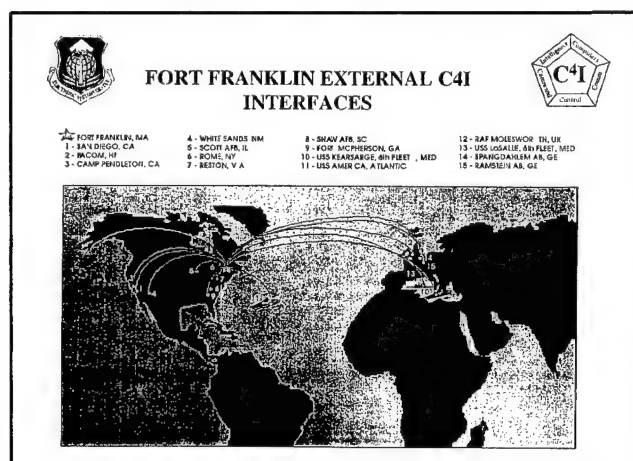
This is not a simple operation, and we have found there are lots of things we are learning. For example, we are pushing commercial off-the-shelf stuff. It really makes sense to leverage that. In setting up the Fort, we found the same vendor that provides telephone switching items has a different protocol on one set than he does on the other version. So we had an interoperability problem.

We also have found as we go to work with geographically separated locations, people who have their systems set up elsewhere, operators, don't follow the TOs [technical orders], so you can't get connectivity. When we finally run that down, our guys who work out in the field everyday in COMM tell us that is a normal problem. Everyday we are collecting a record of lessons, and we will publish them as "lessons learned."

We didn't get full participation of the Army and the Navy. They are very keen on doing this, but they indicated they simply couldn't support it at this time. But we were able to tie in to the Navy in the Atlantic, the USS LaSalle which is their command center in the Med; we are tied in with USAFE; and we are tied in with PACAF. We are also tied in with the Marines on the



west coast. In fact, we had Admiral Owens [Admiral William A. Owens, Vice Chairmen, Joint Chiefs of Staff] up on Friday for a couple of hours, and we were able to direct link to the LaSalle over in the Med, something he can't do anywhere else. There have been a number of other firsts. The LaSalle was able to transmit an air tasking order, and there is a problem in doing that. Ground-based systems trying to talk to the Navy have a problem today as the normal operations go through two satellite links. They're having problems with the links. We were able to find a work-around so by using DSNET, they were able to pass an air tasking order to us, and now we are about to pass an air tasking order to them — the first time that's been done.



There are some 34 interoperability tests we scoped out by working with the users — the other services.

One of the things we've found is we must define what you mean by interoperability, and it is truly situational. The intelligence community has worked this area some, and they have something called DODIIS, and they have come up with seven different levels. We think what the intelligence community did was a good step for really working interoperability.



C4I Systems Interoperability What Are We Talking About Anyway?

INTEROPERABILITY

"... the condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. The degree of Interoperability should be defined when referring to specific cases.

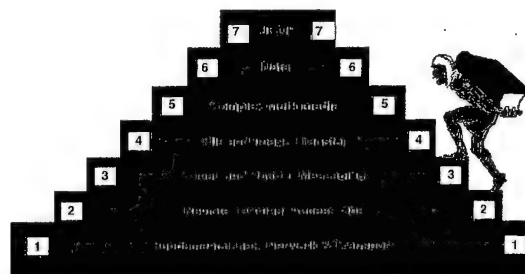
Joint Pub 1-02
The DoD Dictionary of
Military & Related Terms

You don't have to have the same degree of interoperability at every level. You really need to define what your requirements are at the different places so you can go tailor the kinds of things you want to do. At the top of the pyramid, where you really have joint operations, you must have lots and lots of things that work right. Down at the lower level, where you are doing fundamental links, that is a fairly well-defined area and you can do things simply. You need to have discipline and rigor in this process. It will then flow into how much effort you put into each area.



Potential C4I Levels of Interoperability

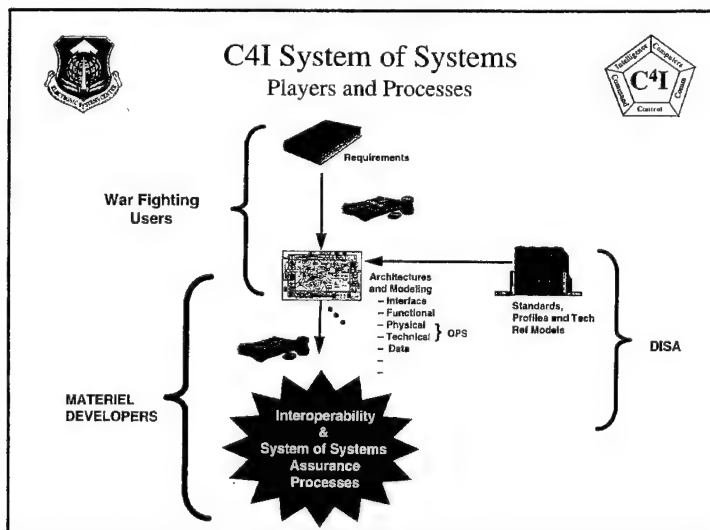
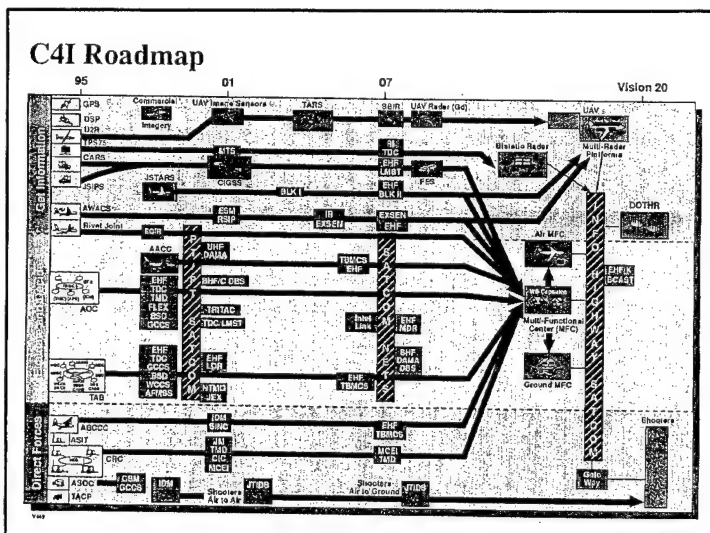
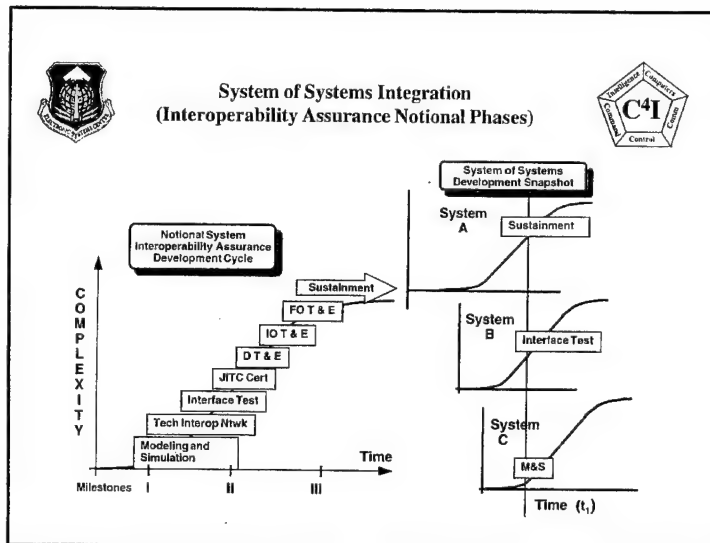
- Seven levels defined IAW DoDIIS experience
- Dependent on system-to-system requirements
- Should be codified to govern DoDI 4630.8 certification



Notionally, what we are pushing for is to start off with better modeling and simulation. It is not fair to say the requirements have to be changed. We have to give the user some tools to help put into perspective a system-of-systems concept. The modeling and simulation is where we would see that going on. Of course that would occur early in the cycle. Done properly, the Technical Interoperability Network will satisfy the JITC certification. So you do that early as well, and by the time you get to sustainment, you have a fully interoperable system.

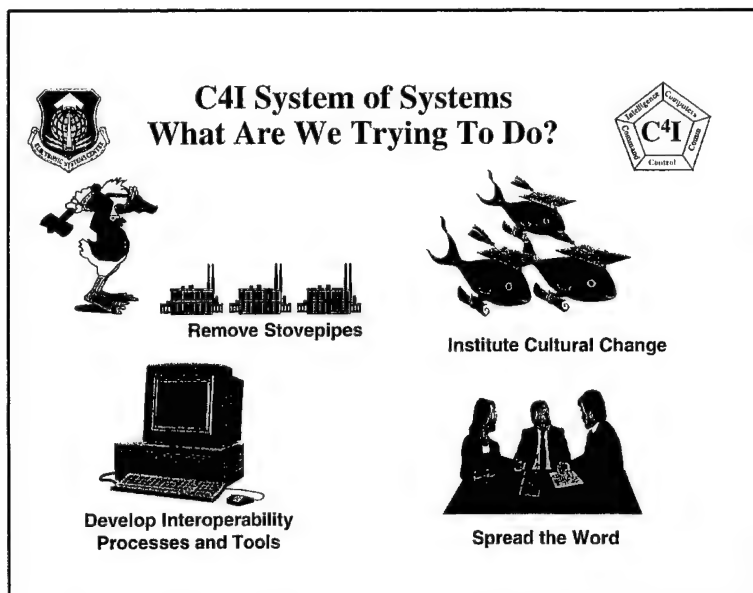
We have road-mapped the Air Force systems today.

We are really trying to bring the warfighters into our Fort and work with us on interoperability. We will take the Technical Interoperability Network and link up with the warfighters, and we are off working our processes.



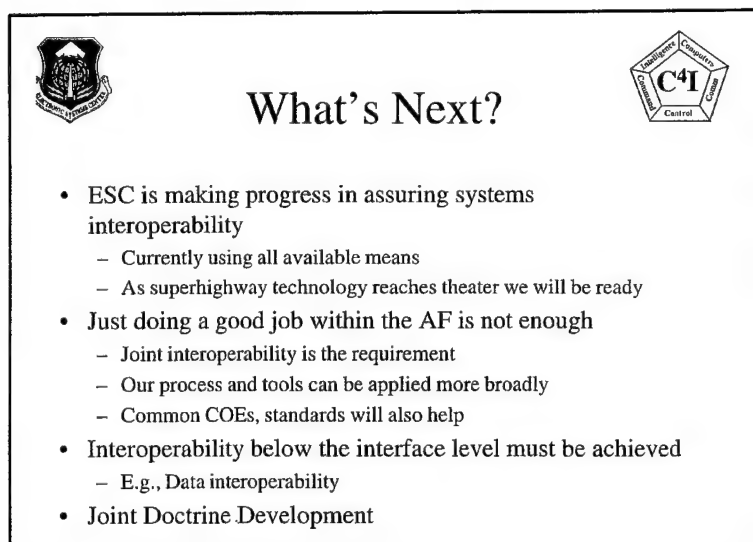
We are trying to get people to think differently. We are trying to get rid of the stovepipes, get a cultural change so people can get out of that stovepipe mentality and start thinking broader.

We must give people tools. Frankly, we must be missionaries on this. In order to get people talking and thinking about interoperability, we have to spread the word and that is part of what we are doing today.



I think we are making progress, but there is a lot to do. Within the Air Force, we've come part of the way, but we have a long way to go. We are really pushing this interoperability issue. We have a long way to go with tools, but we are working on those.

The 20 people working on interoperability come out of our hide. MITRE has, out of the 3 percent fee, something called MITRE-sponsored research. We have MITRE redirecting their research to focus on interoperability. We have 20 people full-time on this — some high-priced, good talent. We are in the budget, not as a PBD [Program Budget Decision] item, but as a reprogramming item for about \$3.6 million next year and about \$5.7 million in 1997, which will be the first time we really get formal direction and funding for this. Things like Fort Franklin come out of our hide. We have gone to the user because it is really his money. Bill Hinton [Brig. Gen. William



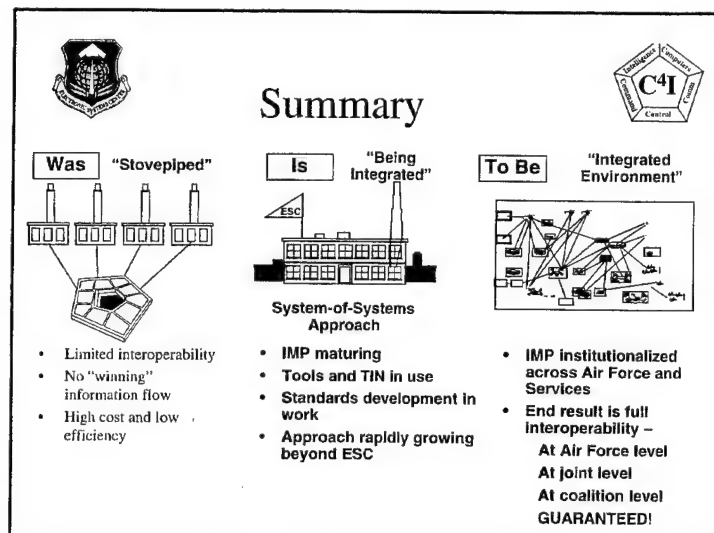
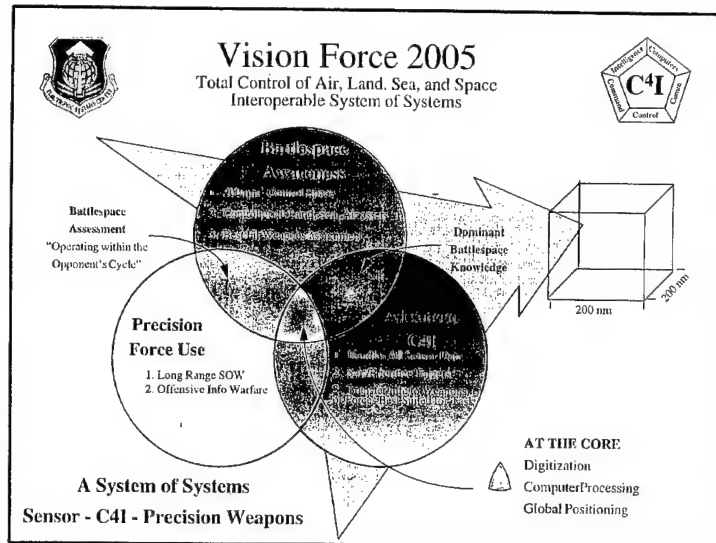
S. Hinton, Jr.] at ACC has said “Absolutely press on.” Lots of people think it is a bad thing to do because it does take money away from other areas, but we are off doing this. Where we think we ought to get into the joint doctrine arena — below the top level on interoperability.

50 OPPORTUNITIES
AND
CHALLENGES IN
ACQUISITION
AND LOGISTICS

Admiral Owens has a briefing that has created some controversy. It is called Vision Force 2005. In my opinion, his concept is right. The details may be wrong, but the concept is right. We have to take separate things, and we have to put them together and look for those places where they overlap so we can increase the amount of battlespace we have under our control and accelerate the data flow so we always turn within the decision loop of the enemy and we have the right data at the right time.

We want to go to full interoperability. At ESC we're trying to produce work with a good housekeeping seal of approval that says it has a national underwriters label that says interoperability has been guaranteed.

Thank you.



Question and Answer Session

GENERAL HATCH: *Thank you, Ed. It is clear there are challenges when dealing with fast-moving technology. While you were talking, I was remembering the Cheyenne Mountain Upgrade Project. As an opening question, where does that project now stand?*

LT. GEN. FRANKLIN: We have that program under control. We are in the mountain, and there are systems that are operational. We still have work to do on it, but it has become a real partnership between AFMC and the user. We found we were part of the problem and the user was part of the problem. There is an excellent working relationship now -- in fact, "team" is the right word. Because the program has worked so well, Space Command said we also want a program manager when we look at Integrated Threat Warning Attack Assessment. That's like a program manager for the world. The guy running the Cheyenne Mountain upgrade is the leader for integration on the Integrated Threat Warning Attack Assessment. We have worked a good arrangement with Space Command and they're partners for that.

GENERAL HATCH: *Ed, as another focus on interoperability, what changes are underway to formalize the system of systems management and implement the concepts across service and agency boundaries beyond the Air Force?*

LT. GEN. FRANKLIN: Let me talk within the Air Force first because I don't know the full answer on cross services.

In the Air Force, we are setting a program management directive specifically to charter this interoperability group.

Across the services, we have not done that. I mentioned early there was some madness in my method. I did not want to create an environment where a lot of people started loading their guns against Electronic Systems Center. So we have not pushed, except at a low level, the interoperability. Although on Friday we did talk to Admiral Owens about this and he has asked us to come back and talk some more. We have been asked by OSD to give them a proposal on interoperability for OSD and we are building that proposal right now.

GENERAL HATCH: *Another question from our audience for General Franklin asks about the Rome Air Development Lab. Will it move to Hanscom or will it remain at Griffiss [AFB, N.Y.]?*

LT. GEN. FRANKLIN: I can only comment on Dr. Perry's recommendation. His recommendation was for 60 percent of the lab to come to Hanscom and about 40 percent go as an Air Force laboratory to Fort Monmouth [N.J.]. Beyond that, the BRAC process has to work and I don't know what the outcome is going to be.

GENERAL HATCH: *Has the standdown of Air Force Communications Command had a negative impact on management of interoperability?*

LT. GEN. FRANKLIN: I think the opportunities that came from the standdown have really been spectacular.

I now own all of the engineering installation work for the Air Force. I also own what used to be the Standard Systems Group down at Gunter [AFB, Ala.] and, although it wasn't a Communication Command organization, the Material System Group here at Wright-Patterson Air Force Base.

Under one organization, we have been able to pull together a true cradle-to-grave approach across the spectrum of all C4I systems. When we looked across the four organizations, we found we were duplicating a lot of things and there is an agreement we can do some consolidation. Also, we had people doing things that weren't in their strength areas, so we are doing some adjustments — putting the work to those organizations that are strongest and moving other things out of those organizations. It has been a real opportunity.

GENERAL HATCH: *Thank you, General Franklin. How do you rate vulnerability of computers in the U.S. military and defense industry to penetration by outside agencies, and what are we doing to minimize it?*

LT. GEN. FRANKLIN: With every good news there is always a wart somewhere. As we move more and more to information dependence and expect information dominance, you have to expect people are going to try to compromise that. You can read articles in the paper as well as I can about the Internet being used to get into Rome Labs and also into some of the defense industry plants — penetrating part of the data bases at the test centers and so forth. There is clearly a vulnerability. There are also clearly ways to work those vulnerabilities. But they aren't always easy. That's an area where we have to be very vigorous. At the encampment, we are doing some of that penetration. There are ways to build your guard about penetration of systems and we are doing that.

GENERAL HATCH: *Thank you Ed. As you look into the future, what potential do you see for off-board targeting and if it is in the future, what can the centers do to enhance interoperability to succeed?*

LT. GEN. FRANKLIN: First, I must say you have asked a non-rated, non-battlefield guy, so I may be a little presumptuous, but I'll still give you my opinion. It's going to come. It's a good area to talk about — the need for really thinking end-to-end systems. We are talking about building high fliers, which you all are competing on. If you have real-time video to an automatic target recognizer so you can do automatic target recognition in real-time, and if you want to fax or transfer video around, you can give the individual in the cockpit at the pointy end of the spear the target with precise geolocation almost real-time. Not only do you give them the target, you tell them on which street corner they are standing.

But, if you don't work the communication pipes, and you don't work the processing part of that total system, you'll find a chokepoint, and you'll find the system will back up on you, and you won't be able to do it. But it is coming. As we talk about force effectiveness, I don't believe we have a choice but to work off-board targeting which means we are going to have a bunch of changes in philosophy.

GENERAL HATCH: *Ed, thanks for doing a great job at Hanscom. You have a wide set of responsibilities that are extremely important to the future of our nation.*

Ms. Sherri W. Goodman
*Deputy Under Secretary of Defense for
 Environmental Security*

Promoting Readiness Through Weapons System Pollution Prevention

Good morning, it is a pleasure to be here this morning. I want to talk to you today about pollution prevention and particularly about how pollution concerns and promotes readiness to our weapons systems. Just a few weeks ago we celebrated the 25th anniversary of Earth Day. At our sites across the nation, our installations, we celebrated how far the Department has come in the past quarter century to be good stewards of the environment and I think we are beginning to be recognized nationwide as an environmental leader.

Today I want to talk about national security interest in protecting the environment.

Environmental Security

Defense Mission

- **Quality of Life**
- **Military Readiness**
- **Military Budget**
- **Modernization**

There are four reasons the Secretary of Defense uses when describing why the environment is critical to the Defense mission.

First, it is a quality of life issue. We want to provide the same safety, health and environmental protection to the men and women who serve our country and our communities, who also serve our country, as the rest of America. We want to provide good quality of life.

Second, it is a readiness issue. A key readiness requirement today is access to the air, land and water where we need to train and test. With 25 million acres nationwide, we are the second largest land managers in the United States. The Secretary of the Interior, Bruce Babbitt, likes to remind me that interior is number one, but we are number two. We need to continue to have access to that land to train and test. One of the ways we continue to maintain that access is by being good stewards of the land. Over the years and in many instances, that land includes islands of endangered species because we've been able to protect our installations from encroachment and rapid commercial development. So, we now have a large natural and cultural resource challenge on our military installations.

Third, it is a budget issue. Through pollution prevention, we can protect our scarce defense dollars because it means less cost down the road in the large clean-up-and-compliance bills we have today. I'll discuss more about the budget later.

Finally, it is a modernization issue because we either pay now or we pay more later. Most of our hazardous materials costs relate to our weapons systems. That is a big bill in DOD today. The more we can reduce our hazardous material, the better we can free up those dollars for other uses.

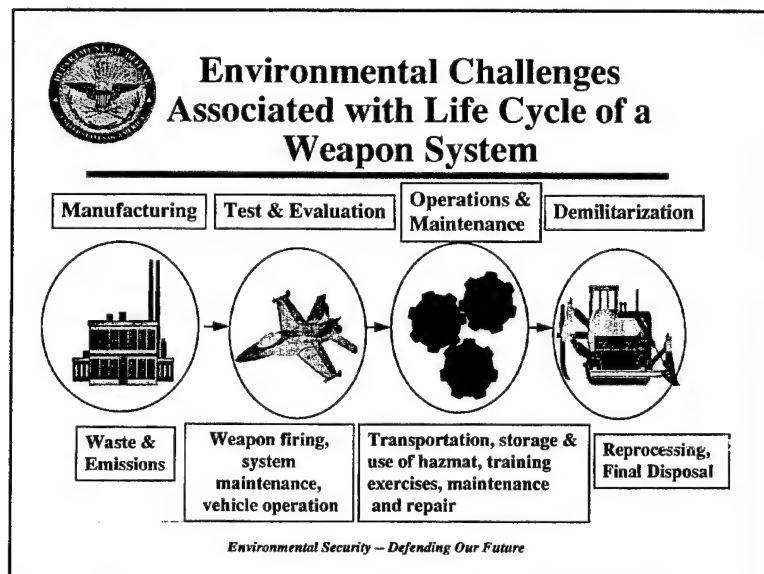
OPPORTUNITIES AND CHALLENGES IN ACQUISITION AND LOGISTICS

Overview

- Why is Weapons System Pollution Prevention critical to preserve defense dollars and ensure operational readiness?
- How can DOD team with Industry to meet these goals?

Environmental Security — Defending Our Future

Why is pollution prevention critical to Defense? This is a question I want to focus on this morning. Why is weapons system pollution prevention critical to preserving Defense dollars and ensuring operational readiness? Additionally, I want to discuss how we can work as a team, Defense and industry, to meet these important goals.



The first thing we have to do is explore how pollution prevention or environmental issues fit into the weapon system life cycle? There are environmental challenges associated with the entire weapon system life cycle. I could have started back even earlier in the R&D [research and development] area because that is where a lot of our technology development is appropriately done. But, as we get into manufacturing you see a lot of waste and emissions coming out of our plants. In the T&E [testing and evaluation] phase, we have another set of envi-

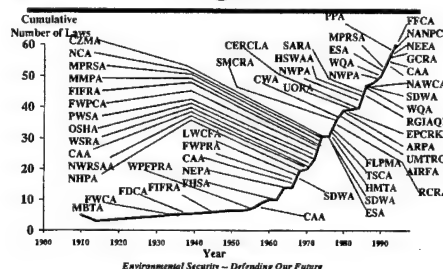
ronmental issues associated with that. With the maintenance programs, there are other issues involved as well. In operations and maintenance it's pretty obvious the sustainment phase has many environmental challenges associated with it, and there a lot of hazardous materials used at our depots and the like. Finally, in the demilitarization phase you've got reprocessing, hopefully some recycling, and finally, disposal.

Since we spend hundreds of millions of dollars annually on purchasing and managing and then disposing of hazardous waste, this is big business for us. We have General Farrell [Maj. Gen. Lawrence P. Farrell, Jr.] who has just come to AFMC from DLA [Defense Logistics Agency] where he had a big challenge — DLA being one of our principle hazardous waste managers in the Department.

What is our environmental challenge overall in Defense? To give you a sense of the scope, we are the largest industrial organization in the United States. We have over 400 industrial facilities. Because we are the largest industrial organization, we have a lot of contaminated sites today. We've got over 10,000 sites at over 800 bases around the country. A hundred of those bases are on the superfund national priority list, including a lot of our Air Force depots. And as I said, we are stewards for 25 million acres of public land around the country.

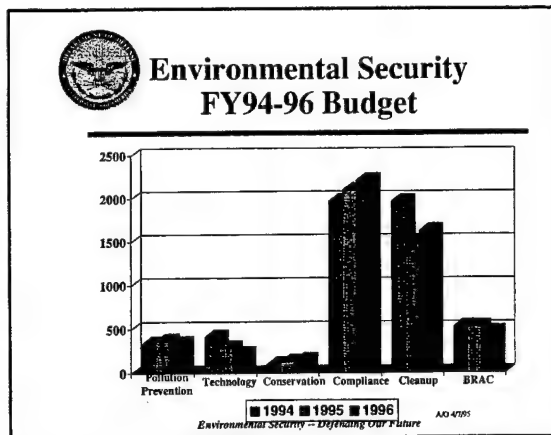


Federal Environmental Legislation



Why do we do a lot of this? Let's look at the growth in federal environmental legislation over the last several decades. These are our requirements in the environmental area. These are all the federal laws that have been passed by Congress in the last few decades. I give prizes for anyone who can decipher those acronyms. I've not had a winner yet, even in the environmental conferences. This is just federal law. For every state, we could do a similar chart because each state has the ability to pass laws with which we must comply. We must do this 50 times over.

If these are our requirements, you can understand what our budget looks like. The budget goes to various environmental pillars. The two big pieces are cleanup of the past contamination and compliance with day-to-day environmental laws. We have smaller pieces in BRAC, that is base closure, conservation, prevention and in technology — very modest amounts compared to the size of the compliance and cleanup budgets.

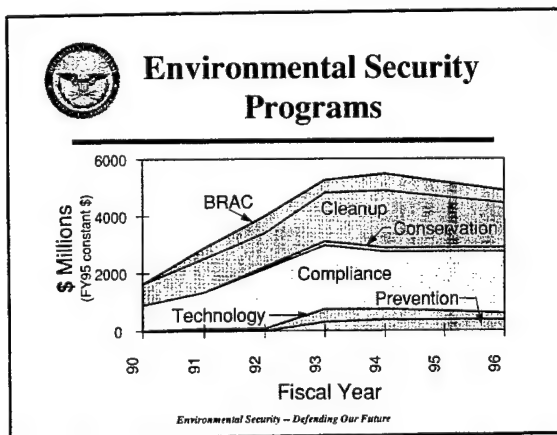


this is a business the Department should continue to be in. We have to make the most with what little dollars we have.

I have to give the Air Force a lot of credit for really beginning this program in the Department. The pollution prevention category, which is not a large investment, owes a lot to the adage by Ben Franklin that "an ounce of prevention is worth a pound of cure." Exactly what is pollution prevention? Why are we investing in it?

Pollution prevention means we are going to try to get away from the end-of-the pipe controls where we are putting scrubbers on stacks or trying to manage the waste at the end of the pipe. Instead, we are going to look at how to reduce the source from the outset or how to recycle or ultimately how to treat it. There are a number of ways we go about that today.

Pollution prevention is important because it affects each of the three major criteria we use to evaluate our weapons systems: performance, schedule and cost.



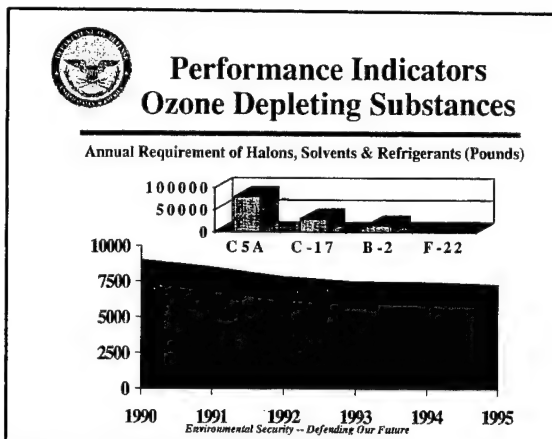
You can also see we peaked in the investment in 1994, and the investment levels have been coming down since then. In the new Congress, they are probably going to come down moderately or perhaps even steeply, particularly in cleanup as the Congress queries whether or not

Let me give you a few examples of each of these areas and let's start with performance. Let's start with one of our favorites, particularly in the Air Force: ozone-depleting substances. Several years ago, through the Montreal Protocol and under the Clean Air Act, we had banned the production of ozone-depleting substances because of their adverse impact on the environment.

We are big users of ozone-depleting substances in Defense, and we use them as fire suppressants and refrigerants, and for many other purposes. We have done a good job in defense — in the Air Force particularly — in reducing our requirement for ozone-depleting substances in the form of halons, solvents and refrigerants; from the C-5A, which had an annual use of over 50,000 pounds, down to the F-22 which has only one use for an ozone-depleting substance. That is a good news story, but, it was quite a challenge, and it hasn't been cheap for us.

That's the good news, but there remains a challenge. These new aircraft, like the F-22, are such a small part of our overall inventory today. Obviously, we are still using a lot of ozone-depleting substances in our older weapons systems, although we are not producing it, so we have to recycle and bank it.

In addition, pollution prevention can actually give us improved product performance. That is a key point and key message you should be left with — careful selection of materials and processes can not only reduce environmental risks, but it can actually enhance, in some cases, performance of our weapons systems. Here are examples: The first is in aircraft corrosion control coatings. This involves hazardous process, typically of cadmium plating. We've worked and developed an alternative called Ion Vapor Deposited Aluminum that



not only eliminates the VOC, volatile organic compounds, which is a significant health hazard, but also offers superior corrosion control and is a lighter weight coating.

There is a similar story with aircraft paint stripping. Instead of using a hazardous stripping process, not only have we made the aircraft painting process less hazardous, we've also reduced the aircraft turnaround time in the process. That is good news.

The Navy has done some good things, too. They are working on a non-toxic coating for ships, which not only will be less hazardous, but it will also reduce their maintenance costs. They expect to reduce fuel costs by perhaps as much as \$100 million a year and have the ships available more frequently. That is a readiness issue.



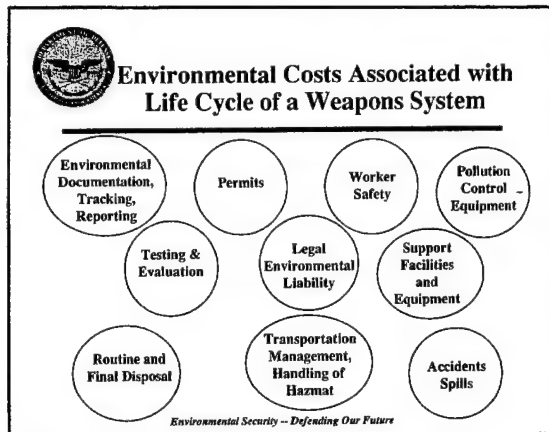
Case Study: Pollution Prevention Programs that Improved Product Performance

Application	Hazardous Process	Alternative that Prevents Pollution	Environmental Benefit	Performance Improvement
Aircraft Corrosion Control Coatings	Cadmium Plating	ION Vapor deposited aluminum	Eliminates VOC emissions, significant worker Health Hazard	Superior corrosion control, lighter weight coating
Aircraft Paint stripping	Methylene Chloride	Bicarbonate of Soda	Reduced hazardous waste generation	Reduced aircraft turn around time

We also have environmental concerns that could have a tremendous cost impact on our weapons systems. What you can see here are the various types of costs associated with the life cycle of a weapons system. It involves everything from the environmental documentation, tracking and reporting, to the permits that are required. There is liability; there is worker safety and pollution-control equipment; the cost of protecting our personnel; the cost of cleaning up accidents and spills; the cost of legal and environmental liability; the cost for special transportation handling and managing of hazardous materials; and finally the costs of final disposal of the system.

Economic impact estimates suggest that for every dollar spent on the purchase of hazardous materials, approximately \$10 are spent handling the material in the production facility, treating the production process effluence, protecting the workforce, associated litigation costs and finally disposing of hazardous waste. That is really an astounding figure. For every time you spend one dollar on buying a hazardous material, you have \$10 in costs associated with it. The more we can do to limit our use of hazardous materials, obviously, the better off we will be.

Noel Longuemare whom you heard from yesterday, and Paul Kaminski, my boss, the Under secretary for Acquisition, have said we really need, in the acquisition business, to be focused as much on the back-end costs of our weapons systems, the sustainment phase — logistics and environmental — as we have on the front end. As we get better visibility to what those costs are, we are better able to incorporate into the front-end how we can reduce those costs in the first place.



PROMOTING
READINESS
THROUGH
WEAPONS SYSTEM
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PREVENTION

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Case Study: B-2

Advanced Technology Bomber

- **California: Strictest Environmental Laws in Nation**
- **Northrop P2 Program — 900 New Materials and Processes in Design/Development**
- **Reduced Use of ODS at facility from 180,000 lbs emissions in 1989 to less than 50 lbs in 1994**
- **Reduced hazardous waste costs from \$3.7M in 1990 to \$600K in 1993**

Let's look at an example right now of a program that has done this successfully. I've already advised my panel member, Colonel Reynolds, that I hope I am not preempting his remarks. So, I am going to keep my story on the B-2 very brief, but here is a good news story. You can't work in California without paying a lot of attention to the environment. It has the strictest environmental laws in the nation. On the B-2 program, the Air Force and Northrop had 900 new materials and processes in design and development. The immediate results of this program had been to reduce the use of ozone-depleting substances at the facility from 180,000 pounds of emissions in 1989 to less than 50 pounds in 1994. Just as significantly, Northrop reduced its hazardous wastes management and disposal costs from \$3.7 million in 1990 to \$600,000 in 1993. I'm

sure Colonel Reynolds will be able to tell you much more about this.

Still, Defense and the aerospace industry face many common barriers in implementing weapons system pollution prevention. Sometimes, we have technological impediments. Our life cycle cost estimating tools are really just at their early stages right now. You all know about the rigid military specifications and standards we are trying to free ourselves from through the acquisition reform process. It is going to take a number of changes. And we are going to have to do a lot of work with you to overcome some of these barriers.

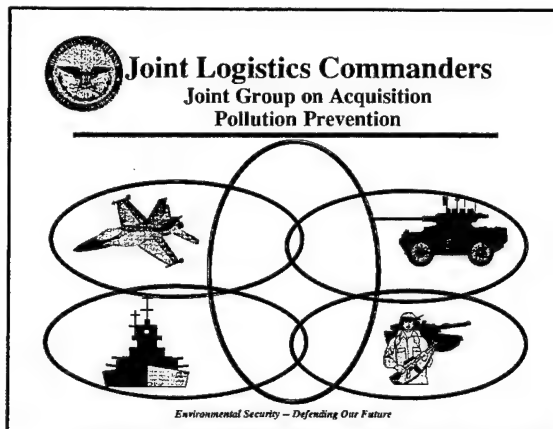
I want to talk now as I close my remarks about three specific ways in which we are working to partner with industry and in which industry and Defense can work together to promote pollution prevention in our weapons systems: Let me talk about National Aerospace Standard 41; the Joint Group on Acquisition Pollution Prevention; and some technology work.

DOD Initiatives: NAS 411

- **Commercial Standard to reduce/eliminate hazmat in all phases of system life cycle**
- **Partnership with Aerospace Industries Association**
- **Hazardous Materials Management Plan**
 - Contractor's plan to assure hazmat eliminated/reduced
 - Influence the system and product design
 - Applied plant-wide, contract-specific or combination

First, NAS 411. Paul Kaminski announced it earlier this year out at Palmdale [Calif.]. This is a commercial standard. I really have to give credit to our industry partners for helping us develop a commercial standard we've now adopted Defense-wide to reduce and eliminate hazardous materials in all phases of our system life cycle. It springs from a partnership with the Aerospace Industries Association. It

involves using a hazardous materials management plan in our weapons programs. The contractors plan will assure the hazardous material is reduced to the extent possible, or, ideally, eliminated. We use this plan to influence product development and product design and will apply it plant-wide or contract specifically as appropriate. This will help us bring some consistency when we go to the table with our contractors and have an assured method for managing hazardous materials. It obviously helps our contractors as well by having a uniform standard.



Secondly, another important effort we have ongoing with industry is the Joint Group on Acquisition Pollution Prevention. This is a group under the auspices of the joint logistics commanders. I have to give a lot of credit here to General Yates [General Ronald W. Yates] and to his other JLSC commanders for really taking up this initiative last year. It is an effort to avoid duplication in our efforts today to reduce and eliminate hazardous materials. The JLSC members will be working together on many of these initiatives. I know one of my panel members, Dr. Pinckert, is going to talk more about this. A number of defense contractors, including McDonnell Douglas, have agreed to participate in some of our pilot efforts under the Joint Group on Acquisition Pollution Prevention.. I am very proud of the

endorsements we've already received from the Aerospace Industries Association and Electronic Industries Association for these efforts. I think it has a lot of promise and I encourage all our other contractors to learn more about this and see whether you would rather participate with us in this.

National Defense Center for Environmental Excellence

- Partnership with Industry
- Develop Pollution Prevention Technologies

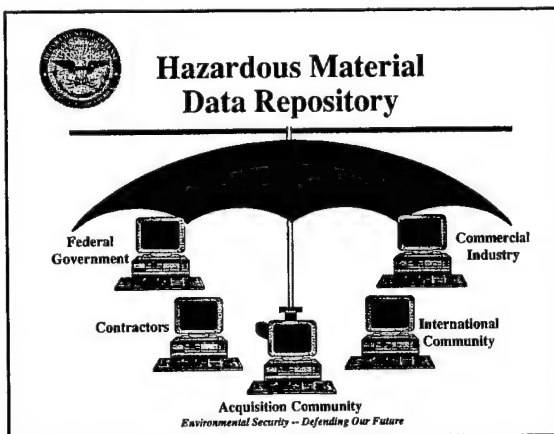
Finally, we are working on some cooperative technology ventures. Let me talk about two different areas. One, we have a location today where in conjunction with industry, we can test new pollution prevention technologies. It is called the National Defense Center for Environmental Excellence. It is located in Johnstown, Pennsylvania, and we have this nice facility where we have a number of product lines available to enable us to test various technologies, and test them out in a tri-service mode with our industry. Bring your product there; the capabilities are set up. In fact, last year I viewed a powder coating demonstration at the National Defense Center where industrial parts are cleaned, pretreated, sprayed with non-polluting organic powders, and then cured. This eliminates the volatile organic and hazardous wastes found in the conventional spray-painting methods. We spend an awful lot of money on painting, stripping, and repainting. The more we can do to reduce those costs, the better off we are. At NDCEE, we have the opportunity, working with industry, to develop and test and get out in the field new pollution prevention technologies. I urge those of you who have got some technologies in the pipeline you'd like to try out, to take a look at this facility.

Finally, also in the technology sharing arena, we are looking at how better to get information about pollution prevention to all potential users. We have a lot of good ideas coming through today. We suffer sometimes from the problem of what I call white noise. It is not that there is not enough going on. There is so much going on, people who are working in the area don't often know where to get the answers they need for their specific issue. We are working again with General Yates and the other logistics commanders to set up a hazardous material data repository. This one is being developed by Brooks. It is an interactive system that will provide centralized access to pollution prevention technologies across the department, other federal agencies, industry and even the international community. My office is committed to work on this project to ensure it is tri-service, and that it is available also on the World Wide Web on the Internet. It is also being supported by the Defense Corporate Information Management System.

In sum, I've outlined for you why environmental security is critical to the Defense mission: Because we've got a big price tag associated with it, if we are doing this smartly, we can actually reduce our costs and we can even, in many instances, improve our performance. A lot of the ways we will get there are through

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pollution prevention. The way we will do that is in partnership with our industry. I am very excited and honored to have had the opportunity this morning to speak with you, and since I've used up now all of my time, I want to go directly to the panel.

Let me ask my panel members to come up now and have a seat here at the table. We are going to make this as interactive as possible. So, after some brief remarks by the panel member, we will take your questions.

Ms. Sherri W. Goodman

*Deputy Under Secretary of Defense for
Environmental Security*

Major General Stephen P. Condon

Commander, Ogden Air Logistics Center

Colonel Richard V. Reynolds

Program Director, B-2 System Program Office

Dr. Richard E. Pinckert

*Director, Environmental Assurance Division
McDonnell Douglas Aerospace Corporation*

Panel Discussion: Environmental Security

MS. GOODMAN: I am very pleased to be able to moderate this panel this morning. We have an extremely distinguished group — Major General Stephen P. Condon, Commander, Ogden Air Logistics Center; Colonel Richard V. Reynolds, Program Director, B-2 System Program Office; and Dr. Richard E. Pinckert, Director, Environmental Assurance Division, McDonnell Douglas Aerospace Corporation. I have known General Condon for awhile, and I am very pleased he is at Hill Air Force Base managing that depot. From an environmental standpoint, it is one of our biggest challenges. General Condon is very proud, as I am, that his chief environmental manager Bob Van Orman, has just won one of the highest awards for his work — the Secretary of Defense Environmental Quality Award. That is a real tribute both to General Condon's work and to what Hill Air Force Base has done in the pollution prevention area. We will start with a few remarks from General Condon.

MAJ. GEN. CONDON: Thank you Ms. Goodman. I am going to give you a perspective of our pollution prevention challenges from an air logistics center perspective this morning. I will tell you a little bit about where we have been, where

we are now, the challenges I see before us and an approach we are using to address those challenges. While I'm going to focus my remarks on our experience at Ogden, it is fair to say these are representative of activities going on across our command and particularly at the other air logistics centers. There is a very strong emphasis and a very strong focus all across the command addressing our environmental responsibilities.

Weapon System Pollution Prevention Challenges

Hill Air Force Base, Utah

Industrial Operations Supporting Weapons Systems

- Involved in a variety of Depot Repair Processes
- 261 processes identified which utilize Haz Mat
 - Large Maz Mat Usage
 - 435,000 lbs of Ozone Depleting Substances in 1992
 - 771,000 lbs of EPA17 chemicals in 1992
 - 10,000 different Haz Mat products utilized
 - 700 different chemicals utilized
 - 7,000 employees utilize Haz Mat
 - Used in 134 different buildings
 - Annual Haz Mat Acquisition Cost = \$11M in 1991

As I am sure it is no surprise to you, we were involved in a large number of operations at Hill such as paint stripping, painting, cleaning, plating and a number of other processes. We took a look at those processes and identified over 250 that utilized hazardous materials. In our baseline year 1992, almost a half million pounds of ozone-depleting substances were used and almost 3/4 of a million pounds of EPA17 chemicals, 10,000 different products associated with hazardous materials and over 700 chemicals. Roughly 70 percent of our workforce was involved in using hazardous materials in a large number of our buildings. It represented a substantial cost to us from the standpoint of acquisition — over \$11 million in 1991.

Progress Made

- **Over 70 Processes**
- **Implemented an aggressive Haz Mat Control Program**
- **Reductions Achieved**
 - Ozone Depleting Substances 94% reduction
 - 435,000 lbs in 1992 to 27,091 in 1994
 - EPA17 Chemicals 77% reduction
 - 771,000lbs in 1991 to 179,261 lbs in 1994
 - Haz Mat Acquisition Costs = 63% reduction
 - \$11M in 1991 to \$4.1M in 1994

We focused on those processes and have made some good progress. We have converted over 70 of those processes to processes that either eliminate or dramatically reduce the amount of hazardous materials we use. We have implemented a very aggressive program of controlling our hazardous materials — things like instituting a pharmacy concept where we have a centralized point for issuing hazardous materials and they are issued only in quantities necessary to execute the processes they are used in. We have implemented a very rigorous tracking process so we know where those hazardous materials are and who has them.

There is a system of accountability. As a result of those actions as well as others, we've been able to reduce very dramatically our use of ODSs; reduction of 94 percent over the two years shown there and also a reduction of 77 percent of use of our EPA17 chemicals and also reduced fairly significantly the acquisition costs associated with hazardous materials.

Future Challenges

- **Eliminate Ozone Depleting Substances by the end of 1995**
- **Reduce EPA17 Chemicals to "as near zero as feasible"**
- **Reduce Toxic Release Inventory (TIR) Chemicals by 50% by 1999**
- **Air Emission Controls required under the Clean Air Act**
 - Eliminate Haz Mat versus expensive emission controls
- **Increasing external pressure**
 - Increasing regulatory burden
 - Downsizing
 - Increased competition

There are challenges before us. We are participating in a goal to eliminate ODSs in our repair processes by the end of this year. That is a formidable challenge. I am not sure whether we are going to meet that goal or not, but we are striving to do that. We are attempting to reduce our EPA17 chemical usage to as near zero as feasible by the year 2000. There is an executive order that requires us to reduce our toxic release inventory chemicals by 50 percent by 1999. There is also a requirement for air emission controls under the Clean Air Act. Rather than employ emission controls, our approach is to eliminate the hazardous material up front, therefore, eliminating the need for the expensive emission controls. As Ms. Goodman indicated earlier, there are increasing external pressures (she showed you the chart on the regulatory burden) that continue to grow.

Benefits of Partnering

- Leverage Resources
 - Save money
 - Improve Efficiency
 - Enhance the environment
- Technology transfer
- Process conversions and material substitutions validated by others

One of the approaches we are using in addressing challenges is partnering. Here, partnering has a fairly broad definition. I am talking about establishing partnerships between ourselves, the program offices we support; between ourselves and other air logistics centers, other Air Force organizations, other OSD organizations and other agencies as well as partnership relationships with industry and academia. There are lots of benefits to this, not the least of which is the leveraging of resources to address the problems that are before us.

The partnership arrangements also provide us with a great opportunity to share technology information and transfer it in both directions. It also provides us an opportunity to have a relative third party take a look at what we are doing and assess the progress we are making. We recognize that no single organization has the corner on the market of all the good ideas in this area, and sharing, through these partnership arrangements, is beneficial to all of us.

Partnering Experiences

- Utah Pollution Prevention Association
 - Coalition of 18 Utah industries
- Design Engineers & Equipment Manufacturers
- Design Engineering Program (DEP)
 - Tech Order Review & Maintenance Action Tracking
 - Design-build Projects
- Utah State University

Here are a few of the examples in our partnership experience. First, Hill Air Force Base chairs a coalition of 18 Utah industries in an organization called the Utah Pollution Prevention Association.

This gives us an excellent forum for information exchange on areas of common interest to all of us, and also provides us with a great vehicle for interfacing with the Utah Department of Environmental Quality.

I am not going to go through all the other partnering areas, but I will mention one with Utah State University. We have an excellent relationship with the university. One of the things they are working with us on is the evaluation of some of our processes. Students from the university are involved in looking at some of the critical processes in our landing gear repair facility right now. They will present us with some additional recommendations on how we can improve the processes from a hazardous material standpoint in that area. That will be beneficial to us, certainly, and also provides an excellent opportunity for the university as we share information with them about the processes we use in our repair activities.

The bottom line is, a lot has been done. We have come a fair distance in the past few years, but there is a lot yet to do. In fact, there is probably more left to do than we have been able to accomplish thus far. In my view, we have done the easy things. There are some very difficult challenges before us. The partnership arrangements will help a great deal. We all have common problems and if we work together in addressing those problems as a team, we will be much better off than we would be if we were trying to address them independently.

Again, there are some tremendous challenges out there. But we've got a great team of folks working there at the Center and all across the command in addressing these problems.

We focus on pollution prevention in a couple of different ways. Under General Roy Bridges [Maj. Gen. Roy D. Bridges, Jr.], we address the pollution activities in our weapons system research

development and acquisition as well as logistics support area. We have metrics associated with that for all of the centers we review on a frequent basis. Under General Bob Courter [Brig. Gen. Robert J. Courter, Jr.] there in AFMC headquarters, we also address in a like manner our environmental responsibilities from a facility standpoint. We have a two-prong attack on this. Again, a lot of work yet to do, but I am confident with the right kind of focus and the right kind of emphasis from all levels, we will continue to make good progress in this area. I look forward to your questions in just a few minutes. Thank you.

MS. GOODMAN: Let me just say for Colonel Reynolds, as the B-2 program manager, he has one of the model programs for pollution prevention. Not only that, he works in Southern California and you must be an environmental expert to manage in Southern California. I've noticed this is not Colonel Reynolds first tour in Southern California. He's been at Edwards [Air Force Base] and comes well prepared to be able to inform us about pollution prevention and weapons system acquisition.

COLONEL REYNOLDS: Good morning and thank you.

■ B-2 SPIRIT

The B-2 Program Challenge:

**A large, composite structure, low observable combat aircraft...
...assembled in California**

B-2 SYSTEM PROGRAM OFFICE

This is the B-2 program challenge — building a large airplane with a lot of composites, 30 percent by weight and much more by volume. It is a low-observable and a combat aircraft which brings us a special set of problems to the fight. You are putting it together in Southern Cali-

fornia, more specifically right in the teeth of the South Coast Air Quality Management District. That is truly a formidable challenge and I'd like to talk very briefly about how the program met that challenge.

How Challenge Was Met:

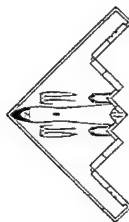
- **Started Early (1987)**
- **Attained Commitment and Buy In**
- **Leveraged Teamwork and Relationship**
- **Kept It In The Mainstream**
- **Related To The Bottom Line**

I will be covering some of same the ground Ms. Goodman covered. I want to make the point that many of the other successes on the program were born from this effort. We started early and that was a key strategy. The date I peg is 1987. The serious work on pollution prevention in the program began at the inception of the program. A group called the Environmental Working Group was chartered in 1987, and they found themselves right dead center in the entire set of processes and working groups of the acquisition. The California regulatory requirements and environmental laws were very restrictive and they were a good forecast for what was coming down the pike in terms of future federal requirements.

I've got to give Northrop Corporation, now Northrop-Grumman, a lot of credit.

They saw the legal implications of pollution prevention. They demonstrated a very early response in the form of a strong commitment to pollution prevention from the top down. The evidence of them taking on the challenge was both very

positive and very strong. In many ways, it was easy to generate a strong sense of commitment across the program. The B-2 program has a number of prime contractors and a large government entity, and it really spread from that center outward.



Northrop showed a lot of leadership. They and the Environmental Working Group were a catalyst for buy-in across the program — all the major subcontractors and vendors, as well as the other primes and the various constituencies within the government.

We leveraged our teamwork and that relationship from the very start. Some of the earliest and best teamwork came out of the environmental working group. The relationship grew out of that common commitment. The SPO, the Aeronautical Systems Division, now the Aeronautical Systems Center, Whiteman Air Force Base [Mo.], — first a SAC and now Air Combat Command operating location — and Tinker [AFB, Okla.] all jumped into the fight and have been playing flat out ever since. We kept pollution prevention in the mainstream from the very start.

The program, because it was a very deeply black program, probably could have treated pollution prevention as an adjunct, but it was an explicit decision to put it into the mainstream. We chose to give the environmental working group equivalent status to the other weapons system development working groups and production planning working groups that were in being at that time. That really made a telling difference in the results we achieved. The approach was to matrix all the requirements and try to understand them. We looked out into the future and tried to predict what the requirements would be five years out. The team decided to infuse into the ongoing design of the B-2 the worst case scenario for pollution prevention in terms of materials and processes. We identified high risk areas — the ODCs, chromes, leads and so forth — and included pollution prevention requirements right alongside all the other requirements in our design process.

Finally, we recognized early and periodically reinforced the idea that profitability would be enhanced by an aggres-

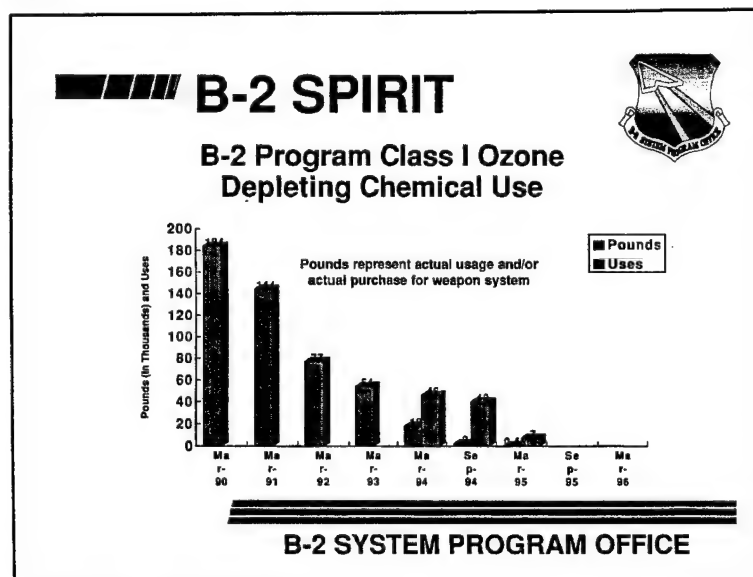
sive pollution prevention approach. The many business deals that have under-written the B-2 acquisition since then reflect that. I have a lot of contingent liability money — which the rest of the Air Force and Department of Defense wants to take — sitting there against our approach to pollution prevention.

The bottom line for the contractors is profitability. The bottom line for me and the rest of the enterprise, in fact the enterprise in total, is the combat capability I deliver to the warfighters on the flightline at Whiteman Air Force Base. From where I sit, without relating pollution prevention to that bottom line, we could not have arrived to where we are today.

Results:

- Ozone Depleting Chemicals
- EPA17 Industrial Toxins
- Technical Orders
- Environmental Excellence Recognition
- Environmental Working Group

There are clear results from our efforts.



Our ODCs have come down very significantly. We are near the bottom of the graph and that is where we want to be. Essentially, it is the same story for the

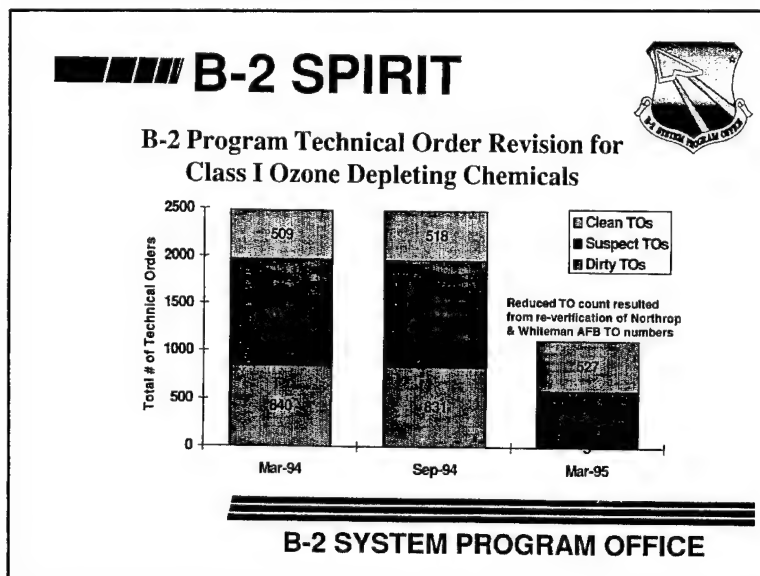
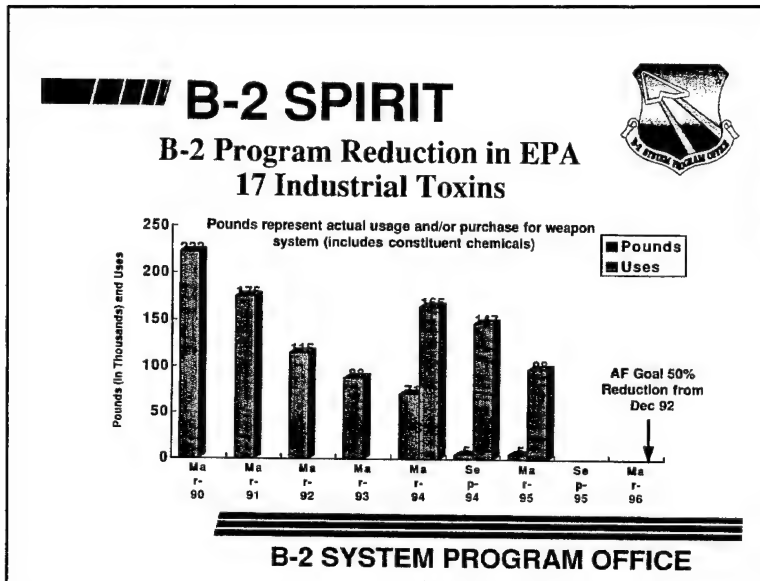
OPPORTUNITIES AND CHALLENGES IN ACQUISITION AND LOGISTICS

EPA17 industrial toxins — although our number of uses is still fairly high. We are down to a very low number, are going to meet the program's goal and essentially close these out in the very near future.

between last year and this year, we came down from 518 essentially "dirty" TOs to zero.

Northrop-Grumman and the B-2 enterprise in total have won a truckload of pollution prevention and environmental awareness and concern awards at the federal, state and local level. The program points to those with a great deal of pride. We do compete very vigorously for those awards, and we have the results to back us up. The Environmental Working Group has over time evolved to become really a model for decisive and effective planning and action across the program. My predecessors, Lieutenant General Richard Scofield and Major General (retired) Ralph Tourino, have pointed to those results and used them to great effect at bringing us to where we are today with the government industry B-2 team, which is a strong team and a team that works extremely well together. The genesis of that result started in the Environmental Working Group.

In summary, today there is simply no other alternative. I can't imagine an SPD [System Program Director] standing up here and saying he is going to treat pollution prevention as anything but a mainstream activity in his program. We have put it dead center in the set of requirements this program has stepped up to. Whether it is contractor profitability or warfighter combat capability, it is the bottom line and that is what we are about. With that, I will turn the microphone back to Ms. Goodman.



Of great concern for me is the technical orders I am buying. We are required to go through those technical orders, clean them up and get the ODS and other hazardous materials out of them. We have done a pretty good job at that. We still have some work to do, but as an example

MS. GOODMAN: Thank you Colonel Reynolds. I am very pleased to have Dr. Pinckert here with us. Being the environmental manager at McDonnell Douglas, he is one of our industry partners in the Joint Group in Acquisition Pollution Prevention. I know he wants to talk about that and McDonnell Douglas obviously brings a lot to the table for us and I am very pleased to have you here with us, Dr. Pinckert.

DR. PINCKERT: I'd like to speak with you about three different things today. First is the challenges I see in pollution prevention. Second is some specific examples of partnering. Then I will follow up with some lessons learned.

Pollution Prevention Challenges

- **Target elimination of hazardous materials/processes with greatest potential of meeting goals.**
- **Develop alternative materials/processes which meet Win-Win-Win criteria:**
 - Environmentally friendly
 - Maintain or improve performance
 - Affordable
- **Incorporate pollution Prevention in initial design while remaining competitive.**
 - Life cycle cost
 - Manufacturing cost

First, all of us realize one of the major challenges is determining which of the specific materials and processes to attempt to eliminate or reduce when you have a huge number. As I believe General Condon said, there were 10,000 different hazardous materials used at Ogden. You have to choose only a few because you only have enough money to eliminate a few. At McDonnell Douglas we do strategic planning. We take a look at our own corporate goals. An example of a corporate goal would be to reduce hazardous waste by 90 percent by the year 2000. Another goal is to reduce air toxic emissions by 90 percent by the year 2000. Certainly, there are EPA regulations, both current and future regulations, we are tracking. We put together a strategic plan,

and then we do business case studies and we look at all the different possibilities to reduce and eliminate hazardous materials. Then we set out and begin the process of implementing our plan.

What we found is you really need to have a win-win-win criteria. If you are going to be successful in eliminating a particular hazardous material, you need to meet certain criteria. Number one, it has to be environmentally friendly. Number two, it has to maintain or improve performance. As Ms. Goodman said earlier, with respect to corrosion inhibitors, she gave the example of IVD aluminum being substituted for cadmium. That is an example of something that gave equal or better performance. As she mentioned, the performance of IVD aluminum actually was better than cadmium. And, it is also affordable, which is the third criterion you need to meet.

The next challenge is to incorporate pollution prevention in the initial design and still remain competitive as a company. Without question, the best way to reduce hazardous materials is to not put them into airplanes when you design them initially. There is a problem with that, as Ms. Goodman said, you have to look at the life cycle cost and yet the tools are only in the beginning stages of being developed. One of the major problems with life cycle cost tools is trying to predict what is going to happen over the next 30 years during the life of an airplane. How much is it going to cost to dispose of hazardous materials 10 or 20 years from now during maintenance operations? How much is it going to cost to dispose of an entire weapons system 30 years from now? That has all got to be put into the life cycle cost analysis and weighed against the current manufacturing costs.

As a member of the industry, if we have to put in some new capital equipment or if we have to spend money up front in the manufacturing arena to save

life cycle costs down stream, it can impact the competitiveness of our proposal. We want to remain competitive and we want to get the hazardous materials out of the weapon system up front and we want to reduce life cycle costs. That is a challenge.

Examples of Partnering

- **Aerospace Chromium Elimination Team**
 - Industry/government technical network team established nine years ago
 - Numerous material & process substitutions implemented
- **On-board Halon Fire Suppression Team**
 - USAF has lead in development of alternative agents
 - MDA providing support:
 - Technical comments on test matrix
 - Aircraft integration impacts
 - Material compatibility data
- **JLC Pilot Pollution Prevention Program**
 - Minimizes duplication of effort
 - Involves all programs at a contractor site
 - Accelerates elimination of hazardous materials

I am going to give you three examples of partnering that have been very successful. The first is the Aerospace Chromium Elimination Team. Nine years ago, offers were sent to the aerospace community to participate in a team to eliminate chromium, and seven aerospace corporations responded. The team was formed and decided to address the elimination of chromium in 18 different applications. Each of the seven companies took two or three of those applications and spent research dollars on trying to find alternatives. Then they shared the data across the board. We then included the Air Force, Navy and Army in that teamwork.

There have been numerous material and process substitutions implemented. It has been very successful. The important thing is everyone saves money and it saves cycle time. If McDonnell Douglas wants to use a product that Boeing has done the research and development on, or Northrop/Grumman, we can just use their test data and lessons learned which they may have spent two or three years devel-

oping, and in six months we can validate it for our own applications. We save the two or three years of initial development time. This has been a very successful program.

The next is on-board halon fire suppression. The U.S. Air Force has the lead in developing fire suppression material to replace halon, which is an ODC and affects the ozone layer. McDonnell Douglas is providing support in three areas. One is we are providing technical comments on the test matrix that will be utilized. Second, we are providing the aircraft integration impacts. What I mean by that is when you use an alternative to halon, that particular material may have an effect on the structural capability or the corrosion susceptibility of the materials it touches within the airplane. We are also providing weapon system level weight and volume impacts for various options based on USAF test data and design equations which specify the quantity of extinguishing agent needed.

Finally, I'd like to talk about the Joint Logistics Commanders Pollution Prevention Program. It is good because you go to each individual industrial site, and all of the weapon system programs at that site have to join together to work together to eliminate a particular hazardous material. We at McDonnell Douglas are very pleased to be chosen as one of the initial three pilot programs. I understand that has been expanded now and there may be seven pilot programs in the works. We met with General Bridges on March 30th at McDonnell Douglas and had a meeting with him and representatives of all the weapon system programs. That's four different services. We have the Air Force, of course, with the C-17 and F-15. We have the Navy with the F-18. We have the Marine Corps with the AV-8B and we have the Army with our Apache helicopter. Not only are you involving different program managers, you are also involv-

ing different services. This will be a successful program.

Lessons Learned From Partnering

- **Involve all impacted players up front**
- **Provide longer coordination time for multiple participants**
- **Remain flexible and build trust with your partners in both technical and business matters**
- **Disclose detailed test data since applications may be different**

There are some lessons learned from working together. The first lesson learned is that you have to involve all impacted players up front. Everyone who is going to be part of the process has to be a part of planning it. They have to feel they are part of the initial plan, and they want to buy into it. Once they feel they've bought into it, they will give it their wholehearted support. Although the following example deals with partnering within McDonnell Douglas in St. Louis, it is applicable to partnering between DOD and industry. The engineering people at McDonnell Douglas have been partnering with the manufacturing people, and have found that if you include the manufacturing people on the floor as part of the team, you find out all kinds of things they think are important to them that we as engineers would never think are important. So it is very important to get all of the players into an initial natural working group team.

Second, provide longer coordination time for multiple participants. This is obvious. The more people you have, the more time it takes to plan.

Third, remain flexible and built trust. Whenever you have several different people partnering together, eachone of those organizations or groups or individuals has to be flexible and give a little bit. All who come to the table have their own initial bias. You've got to give in a little bit and look at the other person's perspective. The way you build trust is to share

your failures along with your successes. I can speak from personal experience. If I am giving a technical paper, I want to explain what a good job I've done and what the good technical results are. Generally, in a technical conference, you don't hear a lot about the failures. But if you are going to build trust with your partners, you have to tell them where you have failed and why you failed so they can learn from that.

The fourth thing is you've got to disclose detailed test data. What Boeing does or what Northrop/Grumman does or what McDonnell Douglas does in the way of testing to eliminate a particular material may not be applicable to someone else's application. So you've got to show them all the data — the temperatures you used, the various environmental aspects, the kinds of materials and all the test parameters.

I am a firm believer in partnering. I am looking forward to your questions. Thank you.

70 OPPORTUNITIES
AND
CHALLENGES IN
ACQUISITION
AND LOGISTICS

Ms. Sherri W. Goodman

*Deputy Under Secretary of Defense for
Environmental Security*

Major General Stephen P. Condon

Commander, Ogden Air Logistics Center

Colonel Richard V. Reynolds

Program Director, B-2 System Program Office

Dr. Richard E. Pinckert

*Director, Environmental Assurance Division
McDonnell Douglas Aerospace Corporation*

Question and Answer Session

QUESTION: *Is anybody keeping track of what it is costing to do all the alternative processes such as revising the technical orders? Are the funds that are required coming out of the hide of the program manager or is there extra money allocated to take care of that?*

MS. GOODMAN: That is a good question. We often need to look at the costs of compliance versus the costs of preventing the pollution. In one of the earlier charts, there were some budget figures showing how in Defense, we are spending over \$2 billion annually on environmental compliance. We spend almost \$2 billion annually on environmental clean up. On those two pieces of our environmental programs, we are spending over \$4 billion annually. Some of those costs are distributed to weapons systems programs — some of the compliance numbers. Clean up dollars are not always seen in your weapons systems acquisition program, but they are costs the Department bears.

Through pollution prevention, I believe firmly we can actually lower those compliance numbers. In fact, we have just gotten some new authority from the President in a program we call ENVEST, environmental investment, to look more

carefully at how we undertake compliance in order to bring pollution prevention better into it and reduce the overall costs. We've gotten some flexibility in how we go about meeting our regulations. In fact, we are going to establish some pilot programs, and I know the Air Force will be very much involved in this. I briefed it to General Yates and his commanders just a few weeks ago. I didn't want to give you the same briefing since I know many of you in blue suits have seen it already. It will give us the flexibility, which we do not formally have today, to trade off what sources we regulate and to look at what gives us a good return on investment.

For example, today we may have to regulate and control the emissions from every activity in every industrial operation. That is not always cost effective. We may find that one or two of the sources of emissions are the big polluters and controlling those actually provides us the biggest benefit.

Now your question addresses what are you going to do when you are required to eliminate a specific substance. Ozone-depleting substances are somewhat unique in that regard. I don't think all of our efforts to improve environmental performance will necessarily take the form of

banning a substance mandatorily as we did with ozone-depleting substances. That does impose a cost on the Department, but we are still using a lot of ODCs in our existing weapons systems, and we are looking at the cost of retrofitting. We will be making decisions based on return on investment. We have a large stockpile now — a reserve of ozone-depleting substances. In fact, we've become the nation's stockpiler of ozone-depleting substances — Defense Logistics Agency is our home for that. We will be reutilizing these substances as necessary. So even though production has been banned and we are looking for the substitutes, we are also being careful to manage both the existing reserve as well as looking at reasonable alternatives. I'd ask any of the panel members if they'd like to speak to that question as well.

MAJ. GEN. CONDON: I would just make one additional comment. I think it is an excellent question. We are keeping track of the costs. I don't have the figures with me so I can't cite specific examples, but while it is true in some cases a replacement material might have an increased cost over what we were using before, the opposite is true as well in some cases.

Also, while in some areas, a capital investment might be required as we change a process, in many cases if we are able to reduce the hazardous waste that is generated, we, therefore, have a reduction in our costs of disposing with that hazardous waste.

Cost is a big deal to us. When the repair dollars were provided to our customers, they got a lot more interested in the cost of repair and we also got a lot more interested in the cost of repairs. There is a lot of focus on reducing the costs of our overall operations. Anything we can do that reduces our costs associated with handling hazardous materials is something we ultimately can pass on to

our customers. There are some real cost benefits to us handling our hazardous waste in a better fashion than we have in the past, and we are certainly trying to take advantage of those.

MS. GOODMAN: Let me just add one thing. We have a new tool that is coming out this summer that is going to be very important to us in getting visibility in what our hazardous materials uses are and then what costs are associated with that. It is in the form of toxic release inventory reporting. For the first time this summer, in June of 1995, we will produce, Department-wide, an inventory of what our toxic releases are by facility. We will know everywhere what hazardous materials we are using and what emissions there are and in what quantities. That will give us data we need, to know how better to manage releases. It will be a very important tool for us.

Industry began this about a year or so ago and is able to find out where the dollars are high and where it makes good sense to invest in reducing those sources.

LT. GEN. FRANKLIN: *Your planning chart shows the technology and prevention dollars will go down. Compliance dollars look like they stay about the same. As we push to worry the front end, you would think that the technology and prevention dollars would go up as opposed to dropping. Have you all looked at the possibility of doing some incentives that would bump the prevention dollars up? If somebody gets the money up front, they will be really working prevention harder so they can save the big dollars in the back. In the world we live in, there are many types of carrots to go along with the federal stick. Has that been looked at?*

MS. GOODMAN: I think those trends in technology and pollution prevention are in exactly the wrong direction. Actually, pollution prevention is about holding its own now. It is about \$350 to \$400 million annually across the depart-

ment. Half that investment is in the Air Force alone, which was the first service to develop a dedicated program element for pollution prevention and then be able to put dollars against it.

Environmental technology investment in Defense is going down largely as a result of what Congress has done to DOD environmental technology programs in the last couple of years. I agree with you those trends are in the wrong direction. What are we trying to do about it? Primarily we are using the ENVEST, the initiative which I just mentioned. In a perfect world, I would increase pollution prevention and technology accounts, and I would still continue my day-to-day compliance and clean up and conservation at the same levels.

Unfortunately, there are no extra dollars around so we have to make some trade-offs. We are trying to do that with ENVEST. By getting flexibility in how we are regulated, we can reduce the investment we must make in compliance and put those dollars up front in pollution prevention and technology. The reason compliance is such a large piece is because it is legally mandated. The way we are regulated by EPA and the states, and the way we've internalized this in Defense in our budget process, is we say I must pay this year for those things where I could be subject to a fine or penalty. We measure all of our commanders, you among them and your colleagues, by how well you are doing in not getting fined and penalized. Which means you have a continuing incentive to put your dollars into what we call those "must" funds. That's good, but at the same time, it has limited us from being able to take a slightly longer term view of what we should do up front in pollution prevention or technology investment, which is not legally mandated today. This is why we have trouble going to the comptroller for more pollution prevention money and he says, "But do you

have to do it this year?" And I reply, "No, but here are my figures to show you what a good return on investment it is." And he says, "Oh, that is very nice, everybody tells me that. But if you are not going to get legally penalized this year, I probably don't have the money to give you."

We are trying to get around this dilemma by gaining the flexibility from the regulators through ENVEST, and we are going to have to start some pilot efforts to demonstrate we can actually still maintain a good level of environmental performance by increasing our focus on prevention and technology. I think the Air Force is particularly well-suited with industry partners to do this because you already have a very good pollution prevention program. We understand a lot of your sources of emissions. You will be able to go to the regulator and say, "OK, for this weapons system program or for this facility, here is what I'd like to do differently. I might not want controls at the end of every pipe, but I am going to invest in pollution prevention, and here is the pay back you are going to get."

I am very excited about this approach, and we are going to have to increase that proportionate level of investment.

QUESTION: *How does your experience relate pollution prevention costs to commercial acquisition programs?*

MS. GOODMAN: I think that is a good question for one of our panel members who is at the program manager level to address first. Colonel Reynolds or General Condon, would you like to take a stab at that?

COLONEL REYNOLDS: I am not doing commercial acquisition, but I would think the concepts and the approaches would be the same. Again, I go back to the bottom line again. You've got to deliver a combat or airlift or some useful military capability that is supportable. If you don't make pollution prevention part of your set of design requirements up

front, you are not going to get there. I'd suggest we probably take that question for the record and find those who are in commercial acquisition out there to consult with you on that issue.

MS. GOODMAN: Two points on that. Relying more on commercial products in our acquisition system is going to help us a lot, even in the environmental area. You know our milspecs require us to use a whole variety of hazardous materials and substances. I routinely have program managers and their staffs approach me and say, "You know, I've been trying for years to get this particular chemical out of my milspec, and it is just so hard and laborious that from where I am sitting I have not been able to do it."

Now we have a process as part of the acquisition reform effort to reduce and eliminate our military specifications and standards where appropriate. As part of that effort, we are looking specifically at getting rid of milspecs and standards that require us unnecessarily to use hazardous materials and substances. I have had a toxic substances group that has worked along with Colleen Preston's [Deputy Under Secretary of Defense for Acquisition Reform] acquisition reform effort to focus specifically on those milspecs and standards.

The other point I would make is we have not been fully able to see our environmental costs in weapons systems acquisition. As you've heard already, the models we have today for environmental life cycle cost estimating are still very rudimentary. We know they are big, but we don't always know exactly what they are. Those will improve some over the next couple of years.

Secondly, we have treated the costs of clean up of past contamination — for example, at our Superfund sites — as an extraneity in the way we do business. Partly because we started out around 10 years ago funding that as an OSD account

and it wasn't in the service budget, the cost of paying for past contamination is not something that is attributed to our weapons systems today. For our contractors we also don't always necessarily break those out and see what those costs are. But we are in the process of changing the way some of those costs are distributed, and when the services have more visibility on that and see that as part of their own TOA [Total Obligation Authority], we may eventually see those costs then distributed and better factored into how we do business, so appropriate trade-offs can be made.

QUESTION: *What are we doing, if anything, to moderate the demands of the regulators, particularly in light of our diminishing budgets that are available for these type of accounts?*

MS. GOODMAN: I see a theme in these questions. The most important thing we are doing right now is the ENVEST initiative where we have authority from the President. On March 16th, he announced a series of reforms in environmental regulation. It was a reinventing government announcement. One of the reforms he announced is a pilot initiative for EPA and Defense and it also involves state regulators to obtain flexibility in the way we are regulated, in exchange for continuing good performance and investments in pollution prevention and technology.

There is also a comparable initiative for industry. Ours will necessarily involve industry as well because everything we do involves both our military and our industry together as partners.

There is a comparable initiative called EXCEL, standing for excellence in leadership, which is designed to provide flexibility in the way we are regulated so we can reduce some of the burden and look specifically at what the return on investment is.

Let me give you an example of a way

we have already begun to apply this new found flexibility. As you know, the Clean Air Act of 1990 is coming into force. There are a lot of regulations being issued in connection with that. One regulation concerns aerospace painting. When we look at the cost to Defense of meeting this one Clean Air Act standard on aerospace painting — reducing the emissions from aerospace painting — we found it was going to cost Defense \$1.2 billion to comply with it. That is a big number.

We looked at what composed that cost and found the first \$600 million would get us more than 99 percent of the required emissions reductions, because we would focus on reducing emissions at our major depots, where we do most of the aerospace painting. We then found the next \$600 million was going to be spent to reduce less than 1 percent of the emissions because it would require us to put controls at our operational and other bases where we do only touch-up work.

We went back to EPA and we said, "This is really not a good investment and this is really not what we want to do here. We think it makes sense to invest only the first 50 percent, \$600 million is by far enough and we don't need to go the next 50 percent." After some time, EPA agreed with us. That is an example of where we brought financial analysis to bear in a way that enabled us to lower the burden.

This is something we probably could not have done two years ago, and I give a lot of credit to Air Force and Navy, in particular, who did much of the analysis and enabled us to show what the benefits to the Department would be, what the environmental benefits are and what the costs are. We are getting better.

QUESTION: *With all the laws and acts, both at federal level and local level, how do you prioritize which of those to comply with? How do you measure how well you are doing? How do you really have the right measurements?*

GENERAL CONDON: I start with the ones I can go to jail for. That is a good question and it is a difficult one to deal with because there are so many laws, so many directives and regulations. The comment was somewhat facetious, but it has a serious side to it as well. There are some fairly strict penalties associated with some of these and obviously we pay a lot of attention to those too. But as I alluded to earlier, there are a number of things that are smart things to do that also end up complying with the directives and the regulations. They are smart in terms of return on investment. We try to use that as one guideline in trying to prioritize the work we do.

As I mentioned earlier, there is a different cost culture now in our business than there was just a few years ago. Cost to the customer has become something that is really high on our priority list, too. So we do look at things like return on investment to do that.

I won't tell you there is a good objective formula that we can just plug the information into and crank out the answers. There is still a lot of subjectivity involved. There is a wide variety of things to be considered as we do that. And, as I am sure you can appreciate, we always find there are more good things to do than we have the immediate capital to be able to do. So, coming up with a scheme that allows us to look at the seriousness of the situation and also the return on investment is something we have found quite helpful.

COLONEL REYNOLDS: The acquisition cycle guides you. You develop first, produce, sustain and sometimes you do those all at once. But, usually you start in some sort of sequence. Doing those tasks in sequence is the approach the B-2 program took. Ultimately, we looked at the cost of ownership to the warfighter and his ability to get combat capability out of the system we deliver becomes your

endgame.

How do we know we are doing enough? The approach the B-2 program took was to try and do it all — to set aggressive goals, 100 percent compliance — and as I said in my remarks, look out ahead at what might be emerging, what federal requirement might apply to Whiteman Air Force Base derived from a state or local requirement.

We've used metrics more aggressively over time to chart our progress. Those get visibility at the program review level, at my level, and sometimes at the AQ [Assistant Secretary of the Air Force for Acquisition] level when we have to stand before my boss and describe the progress of the program. It is working. It is not always infallible. Occasionally, we come across a substance or a process we should have worked hard earlier, and we have to play catch up. In general, it is guided by the acquisition life cycle.

DR. PINCKERT: From an industry perspective, in St. Louis, we have to meet EPA regulations, Missouri regulations and local regulations as well as goals from our own McDonnell Douglas corporate headquarters. I have a group of people who meet every two weeks and take a look at all the regulations that have come out — all the changes in regulations that have come out. We are basically following approximately 200 different directives continuously. We take those 200 directives, and we strategically plan which ones we need to react to or be proactive to over the next 7-10 years. Then we take a look at return on investment, we do business case analysis, and we chart a course for ourselves as to what we are going to do when, and then we follow that plan.

We do have metrics. We have specific goals about hazardous material usage reduction, hazardous waste reduction, and we are constantly checking against those metrics and report it to our boss, higher level management at McDonnell

Douglas.

MS. GOODMAN: Let me thank you all. We've come to the end of our hour. It has been a very interesting discussion. You can see we've made a lot of progress. We have a long way to go, but it reflects that we are really at the beginning of a new period. Environmental knowledge and understanding is a fairly new field in this country, and we are pushing the envelope. Over the next decade or so, we are going to see a lot of maturity and see this incorporated into our business processes even more successfully than we've done so far. Let me thank you all and have a good morning.

GENERAL HATCH: *Let me thank all of the panelists and I think we'd all agree we have a very talented and well-spoken deputy undersecretary of defense for environmental security. Ms. Goodman, thanks for being with us.*

Major General John W. Handy
Director of Programs and Evaluation
HQ USAF

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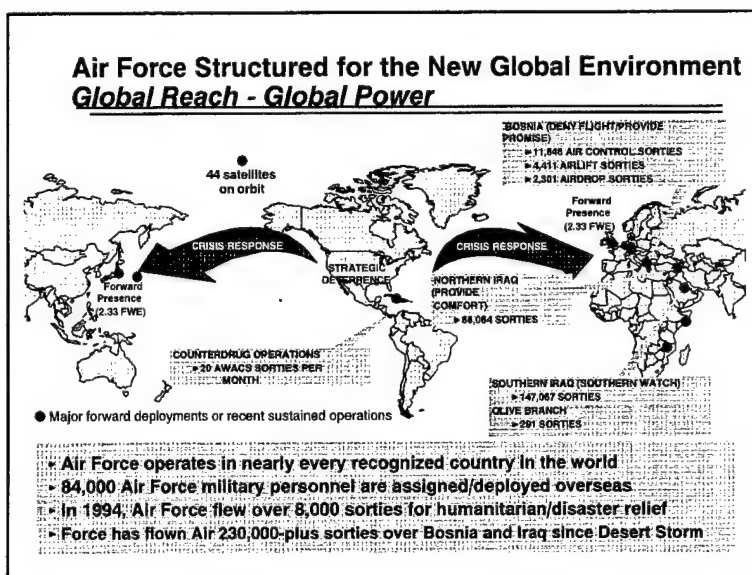
Air Force Program Update

What I would like to do today is create a vision in your minds that can help answer questions about what the Air Force is about and where we are headed. With only about six weeks on the job, I hope I don't embarrass myself briefing you on programs about which many of you are the experts. The only qualification to the briefing is that everything has been declassified, so you will not see all the specifics in some instances. I will use the following framework for our discussion:

Overview

- The Changing Global Environment
- Key Contributions of Aerospace Power
- Operational Requirements vs Fiscal Realities
- Reshaping the Force
- Operating the Force
- Recapitalizing the Force
- Conclusions

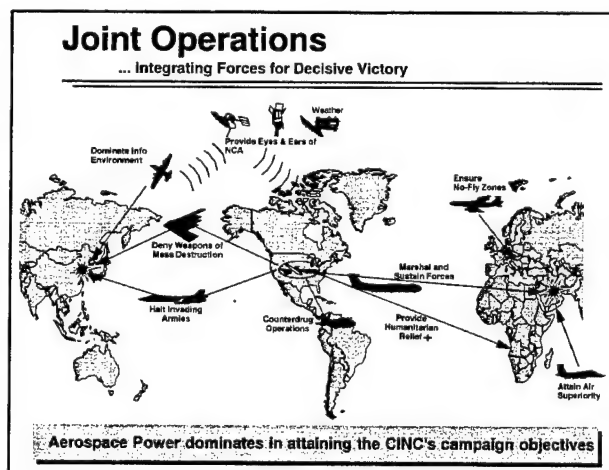
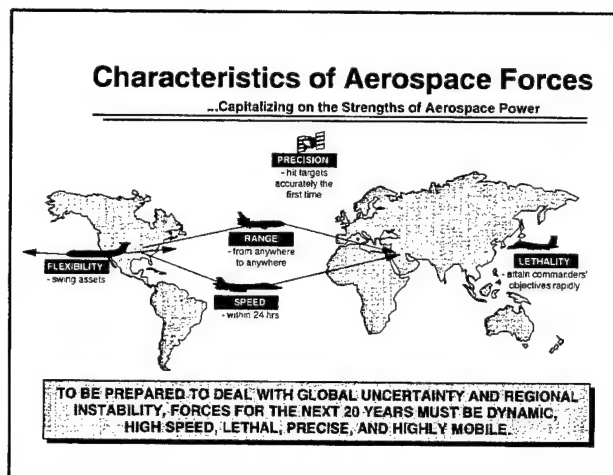
I will be happy to answer some questions at the end.



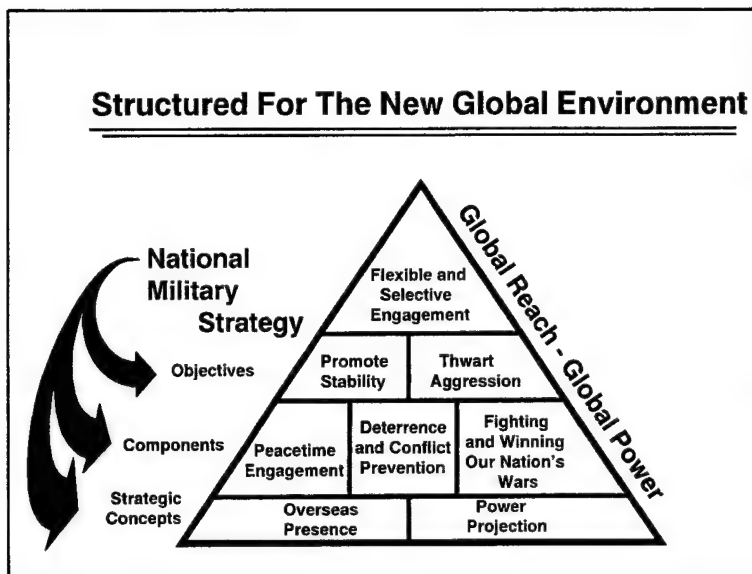
When we began this year's POM (Program Objective Memorandum) deliberations, we asked ourselves a few fundamental questions about where we stand in the world. From a very "macro" perspective, we can see some of the things the Air Force has been involved with in the past year as well as where we stand today — we have 84,000 people forward deployed in Europe and the Far East, and another 9,000 overseas on temporary duty. That amounts to over 20 percent of our people; that's a significant presence, and also very demanding, especially when you consider the broad range of missions we're conducting, ranging from peacekeeping to counter-drug operations to humanitarian assistance.

In such a dynamic world, we need to clearly understand what capabilities we have to bring to the fight. We need to make sure the nation can capitalize on the strengths of air power and its unique characteristics — speed, range, lethality, precision and flexibility. Because of these characteristics, we can respond quickly to crisis situations around the globe, project power and influence world events on a moment's notice, in a variety of roles, and, if needed, quickly and effectively attack and destroy selected targets. Within days we can deploy formidable forces anywhere in the world.

One of the most important things we have to realize is that we're part of a "team within a team" — one of the most basic realizations inside the Pentagon today is that anyone who tries to go it alone is going to be left alone. Joint operations are the way we do business, and will continue to be the way we do business in the future, except we'll get better. We are focusing plenty of attention on how we complement the other Services and what the Air Force as an institution brings to the military aspect of our foreign policy. We're committed to building capabilities which the warfighting CINCs need — all of our forces are designed to support or enhance joint operations. We can't emphasize that enough.



The current National Military Strategy, drafted in February 1995, is defined as "flexible and selective engagement," with objectives as shown — to promote stability and thwart aggression. The components of this strategy, peacetime engagement, deterrence and conflict prevention, and fighting and winning our nation's wars, are facilitated by overseas presence and the ability to project power. As you know, in 1991 our then-Chief, General Merrill A. McPeak, very succinctly put forth our vision for the post-Cold War era: *Global Reach, Global Power*. Our view is that *Global Reach, Global Power* encompasses the entire spectrum of the current National Military Strategy. Let me take that vision, *Global Reach, Global Power*, and add a little bit to it.



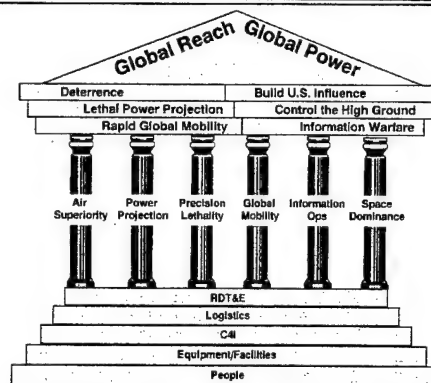
OPPORTUNITIES AND CHALLENGES IN ACQUISITION AND LOGISTICS

One of the greatest fears a programmer has is that we would build a "Programmer's Air Force" — in other words, a fiscally constrained Air Force. We would make decisions based upon the dollars available rather than on who or what we are as an institution. Therefore, early in our Air Force Board deliberations, we had a discussion about core competencies. To set the stage for that discussion, we first had to understand the tenets which underpin the *Global Reach, Global Power* vision. In 1991, there were five tenets — deterrence, lethal power projection, rapid global mobility, control of the high ground, and building U.S. influence abroad. In the past 18 - 24 months, we added a sixth tenet, information warfare, in recognition of the extraordinary importance the information realm will have in any future military operation.

Within the framework of the vision and the tenets which support it, we started asking key questions about our core competencies — those capabilities the Air Force brings to any operation and what we believe we do either exclusively or better than anyone else. The pillars on this chart reflect those core competencies — air superiority, power projection, precision lethality, global mobility, information operations, and space dominance. Within the core competencies are the various mission areas that we support with force structure — fighters, bombers, airlifters, satellites and so forth.

From a programmer's perspective, we can't focus so much on core competencies, however, that we ignore cross-cutting issues. The foundation of our force, and certainly our most valuable resource and most essential building block, is our people. People constitute the core, the foundation of who we are as an

Air Force Core Competencies



Air Force. Other cross-cutting areas, such as those shown on the slide (equipment/facilities, C4I, logistics, and RDT&E) all feed the pillars, those core competencies which underpin the tenets and vision which help us support the National Military Strategy. This is the construct we use to develop our programs. It is extremely important, as a programmer, to realize that we have to put the dollars against the competencies, rather than constraining the competencies by dollars—there's a big difference there in how we think about putting the program together. We need to understand where we are today and know where we need to go in the future — we need to maintain the right balance between readiness today and relevancy tomorrow.

This slide depicts the resource priorities in this year's Defense Planning Guidance. From a broad perspective, this is also the metric used to grade the POM. As we program the dollars to maintain and develop the core competencies, we need to make sure we pay attention to these priorities. The challenge ultimately, as we discussed earlier, is to maintain the balance among these priorities — near term, mid term and long term.

Resource Priorities

...Operating Today's Air Force While Investing in Tomorrow's

- Readiness and Sustainability
 - Quality of Life
- Force Structure
- Critical Enhancements
- High-Leverage Science and Technology
- Systems Acquisition
- Defense Support Infrastructure

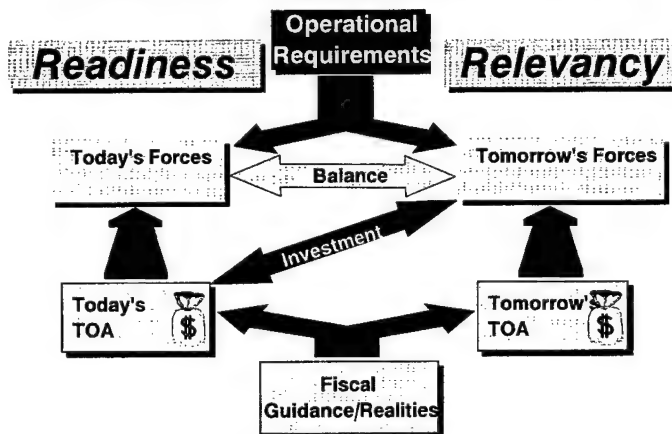


The challenge: maintaining a balanced program

If our goal is to maintain today's readiness and still be a relevant force in the future, we have to have some balancing dynamics. On this slide we can see that the arrows tend to balance each other, except for the one labeled investment (across the middle). That is a two-way street; what we're saying is simply that any kind of imbalance between investment for tomorrow and expenditure of resources for today's readiness might lead to no relevancy at all for tomorrow's force. An Air Force of extremely ready F-86s probably wouldn't be too relevant today, and we can apply the same analogy to some of today's forces. Keeping the balance in investment is a challenge, one we've faced particularly during the past couple of years and one we can see dramatically in the 1997-2001 time frame. Some of the toughest decisions we're making today involve balancing readiness with modernization for the future.

The Challenge

...Operating Today's Air Force While Investing in Tomorrow's



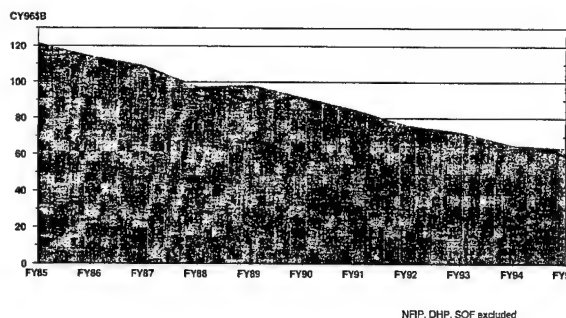
How are we doing that? In 1987, when I left the Pentagon working as an action officer, we were dealing with an Air Force which had over \$100 billion per year, not including the National Foreign Intelligence Program, the Defense Health Program or the Special Operations Forces. Today we are looking at just around \$60 billion per year — that's nearly a 50 percent decrease since 1985. Our FY94 topline (\$65 billion) was the lowest since 1975, so we continue to set new record lows, although we do expect some growth in the out-years.

This is not all doom and gloom — it simply reflects a sense of reality in the country and certainly within the Department of Defense. It just reflects where we are today. We have to look at this \$60 billion Air Force and determine where we can best put those dollars to get the most "bang for the buck."

The world has changed, so we have the opportunity to move to a lean, mean organization. There was a very well defined, very identifiable, monolithic threat in the 1985-1989 time period that went back for the previous 45 years or so. That provided the rationale for the size and type of force that we programmed. That threat is gone. Now we're faced with programming for dual, nearly simultaneous major regional contingencies (MRC) — this may not imply a lesser threat, but it is certainly a less focused threat.

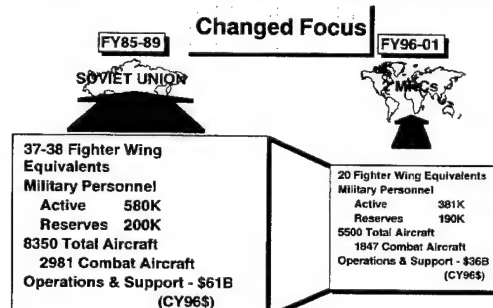
We cannot predict precisely where those two MRCs might be or who the competition might be, but we're certain we won't need a force of 37-38 fighter wing equivalents and almost 600,000 personnel. This chart illustrates that

Air Force TOA FY85-FY95



Reshaping the Force

...Reducing and Streamlining Early

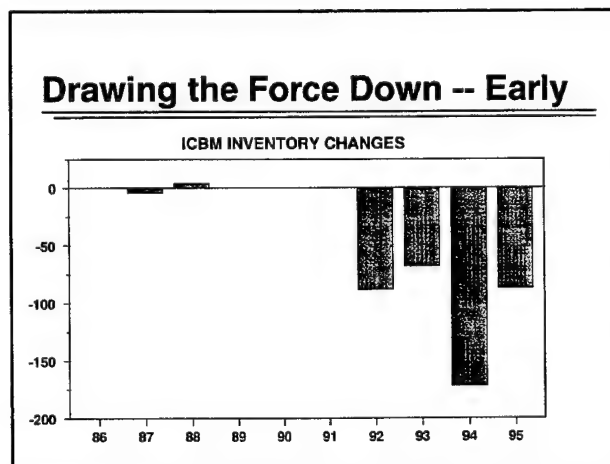
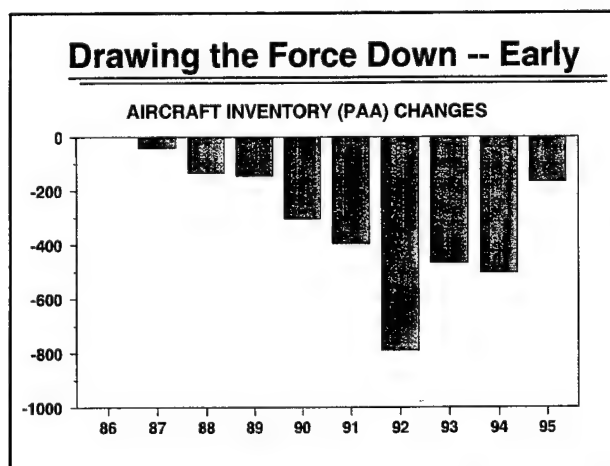
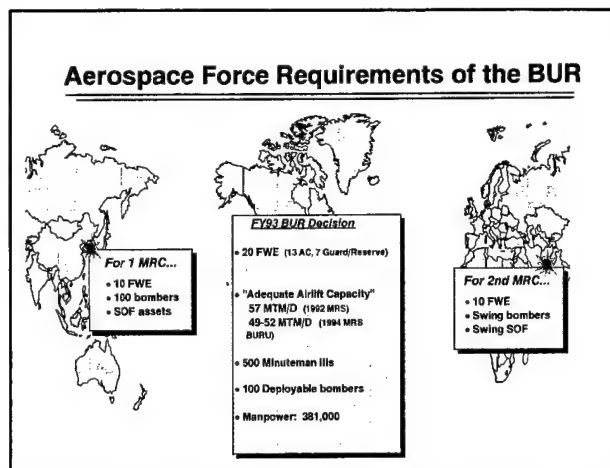


we've changed focus away from that large force of the late 1980s to the Bottom Up Review (BUR) baseline of 20 fighter wing equivalents in the FY96-01 FYDP (Future Years Defense Plan). We've reduced active personnel, combat aircraft and operations and support by one-third; we've reduced major CONUS installations by over a quarter and major overseas installations by two-thirds.

Everybody is familiar with the Bottom-Up Review, and there have been BUR updates, mobility requirement studies and other large efforts designed to fine-tune the BUR. We pay attention to all of them, and we're trying, very successfully, to size the Air Force prescribed in the BUR. This reflects a vision of the post-Cold War world, replete with a different set of dangers posed by potential proliferation of nuclear weapons and other weapons of mass destruction, regional dangers, dangers to democracy and reform, and economic dangers. There is some risk in the size of the force, shown here, that the BUR prescribed for us, but we can handle the second MRC by swinging the high value forces such as F-117s and some of the bombers.

How have we managed the force drawdown? The following series of charts will summarize changes over the last ten years. The key observation is that we've come down as fast as we can, with the major reductions occurring in the early 1990s — we took out nearly 800 aircraft from the force in 1992 alone. But, we have pretty much bottomed out and should begin to capitalize on the savings which come from aggressively managing this drawdown.

These changes do not affect just aircraft. This chart shows a similar trend. As we implement START I and prepare to implement START II, there will be some minor changes to this in the outyears, but basically we are modifying and retiring systems to comply with treaty requirements.

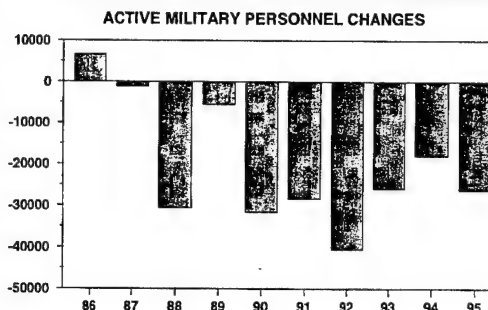


The number of active military personnel has also changed dramatically. It is staggering to realize that 40,000 people came out of the force in one year alone (1992), but also that we averaged almost 30,000 losses per year for four years. That was painful, and we're not quite through yet, but it was what we needed to do — get it done very early, very quickly, and get it over with so we can concentrate on the future.

By every measure of merit, the Air Force has cut to the core. This slide shows some dramatic percentage changes, but it also means we've clearly defined our concept of who we are today so we can pursue the vision of who we will be tomorrow.

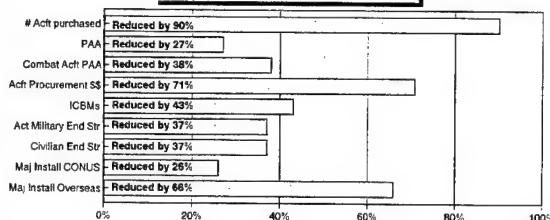
We've also made some rather dramatic organizational changes, all designed to streamline the chain of command and delayer our staffs. Since 1985 we've substantially reduced headquarters personnel at the Air Staff, but more importantly, we restructured from 13 to 8 MAJCOMs, and completely eliminated all 30 air divisions — we completely eliminated an entire layer of bureaucracy! We increased the number of our Numbered Air Forces from 12 to 17, but at the same time we reduced their size to 99 authorized people (we increased the number because of our emphasis on readiness — the NAFs are in charge of readiness). This approach is part of our Quality Air Force — we've delayered and empowered people at the lower levels to do things. That makes our wings more important than ever, even as we've reduced their number from 154 to 92. The

Drawing the Force Down -- Early



AF Reductions from FY85 to FY95

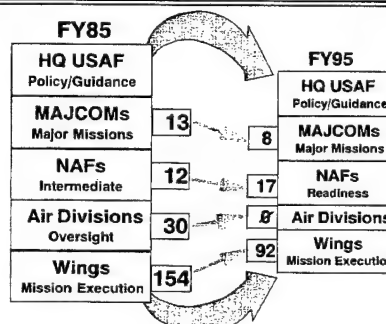
We have cut to the Core !



By every measure of merit, the Air Force has met the challenge.

Restructuring the Air Force

...Streamlining, delayering, consolidating



bottom line here is that we've coupled the force drawdown with structural drawdowns to put the power of decision making in the hands of the people who ought to have it. We don't need large bureaucracies to do that. This has helped us get down to the right size and operate much more efficiently.

Each line on this slide speaks to a specific area of restructuring to get the Air Force to where we are in 1995. We should all stand up and be proud of this; however, we have to realize that we've taken about all we can out of force structure and modernization. That means we have to look elsewhere for savings. The Chief has talked at length about "stability now" and that it is "time to stay the course." We need to figure out how to do that.

The Air Force moved out smartly to close CONUS and overseas locations. We tried to divest ourselves of unnecessary overhead, and pay the closure bills up front, so that we could accelerate reaching our "break even point." This Base Realignment and Closure (BRAC) process is, in its purest sense, about CONUS base closures, but we also need to take credit for the overseas drawdowns — we've reduced our overseas base structure by 66 percent.

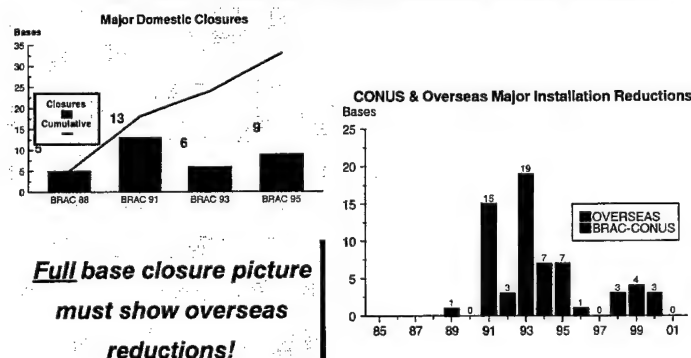
We're very proud that 71 percent of all creditable BRAC savings are due to Air Force decisions; the rest of the Services and agencies combine for the other 29 percent. We need to keep "lead turning" in this area, because we have to avoid getting into a position where infrastructure, the cost of turning on the lights and opening the doors, consumes all of our budget. We have to find ways to operate more efficiently.

Streamlining the Air Force: Results

- Integrated recruiting, training & education -- (AETC)
- A dedicated power Projection command -- (ACC)
- Global mobility assets under one boss -- (AMC)
- Theater commands own all assets in theater -- (PACAF, USAFE)
- Unified command for launch/missiles -- (AFSPACE)
- A dedicated Special Operations Command -- (AFSOC)
- Cradle to grave logistics support command -- (AFMC)
- Eliminated a layer -- (Air Divisions)
- Commanders control all resources
 - Airlift, communications, weather, intelligence, rescue
- Numbered Air Forces focused on readiness
- Wings structured for warfighting & sustainment

Infrastructure Drawdown: Base Closures

...Reducing Overseas and CONUS Basing Structure



BRAC Savings Reported

...Reducing Overseas and CONUS Basing Structure

"For domestic facilities, much progress was made through the base realignment and closure (BRAC) process in 1988, 1991, 1993. These three BRAC rounds approved the closure of 70 major bases and are projected to save \$6.6 billion during their overlapping 6-year implementation periods (FY 1990-99)."

DoD News Release, FY 96-97 Defense Budget
Feb 6, 1995, p. 8



BRAC Savings

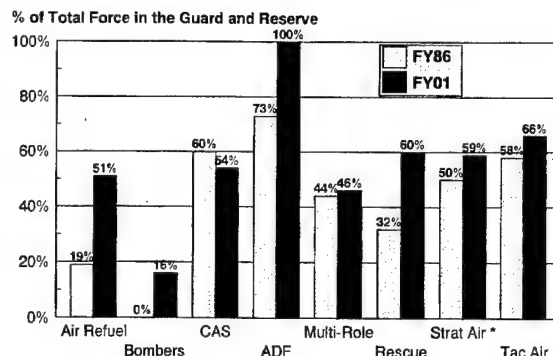
FY 90 - FY 99

Air Force	\$4.7B	71%
All Other Services/Agencies	\$1.9B	29%
Total	\$6.6B	100%

The Air National Guard and the Air Force Reserve continue to make up an increasing share of our force structure. That single fact should convince everyone that we are completely, unequivocally committed to the Total Force concept. The Guard and Reserve have modern equipment — they fly the same aircraft as the active force — and they've picked up several new missions. We've transferred a portion of the bomber force to both the Guard and Reserve, as well as more of the strategic airlift mission. With the advent of 1st Air Force, all air defense radar sites are manned by Guard personnel. The only place on this chart where the Guard/Reserve contribution to a mission area has decreased, Close Air Support, is because of the overall reduction of the size of the CAS force, which had already been substantially in the Guard.

There's no question that as an Air Force, we've led the way in posturing ourselves to contribute mightily to the joint team in the years ahead. We led the way in the force drawdown, took dramatic action to streamline, delay and reduce overhead, closed a substantial number of our installations at home and abroad, and made a significant commitment to strengthen the Total Force. We think we're where we need to be. We owe a great debt to General McPeak and his vision of where we ought to be at this time. Those early decisions have allowed us to settle in to a more stable environment, where we can

Strengthening the Total Force



Reshaping the Force: Summary

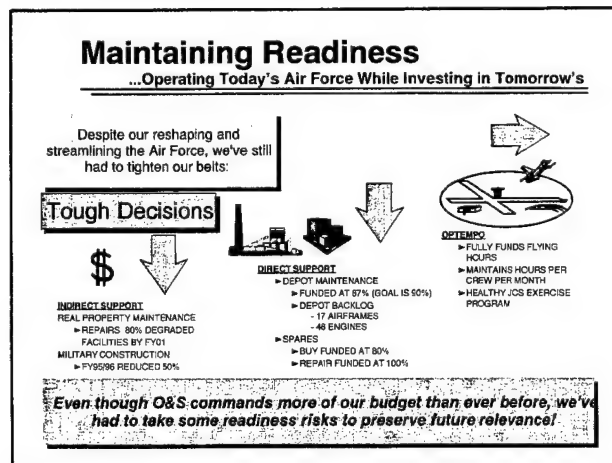
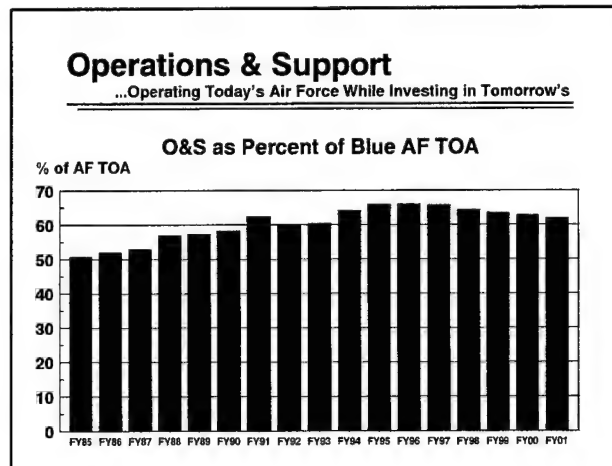
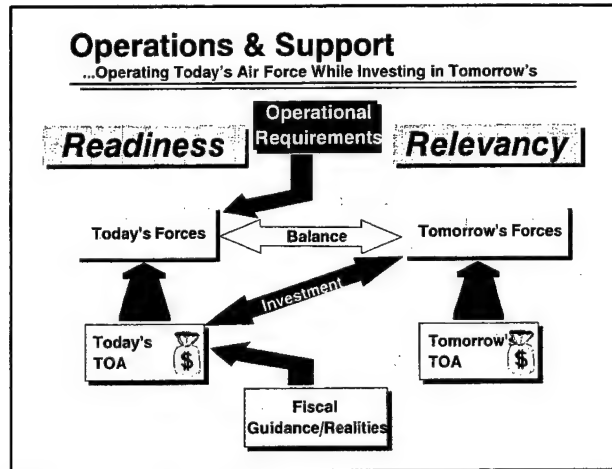
- The AF has led the way in reshaping the force by:
 - "Lead-turning" the force drawdown
 - Organizational streamlining and delaying to reduce fixed overhead
 - Closing installations
 - Strengthening the Guard and Reserve
- The AF aggressively pursued these changes *early* to achieve operational economies
 - As a result, we are *ready* today and will be *relevant* tomorrow

concentrate on relevancy — making the right decisions about the size and composition of the Air Force of tomorrow.

We've placed extraordinary emphasis on readiness and sustainability to ensure we have a force that can fight and win today. Nevertheless, we have and we will continue to seek operating economies — that's part of the "balance" equation.

As a percentage of TOA, we are inching up to the point where we're spending between 65 and 70 percent of the budget on O & S. That's a record in Air Force history, and it doesn't leave as much as we'd like to have to protect both readiness and modernization. We need to turn this around, rather aggressively, so we can afford to buy the equipment and pay the people we need to field a relevant force in the next century. This is why we are so concerned about reducing infrastructure and the bills that go with it — they're staggering.

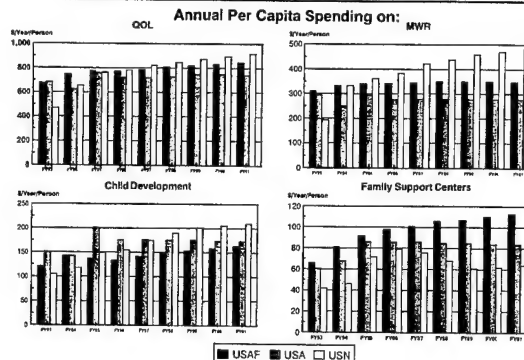
Despite all the great work we've done, we've still had to take some risks. We've managed to keep OPTEMPO where it needs to be, but have had to make some decisions to drive down direct and indirect support costs. The examples on this chart illustrate where the impact is being felt — as we know, we can only take actions like this for short spells unless we can achieve efficiencies through modernization and by reducing infrastructure. I can assure you that we watch these areas very carefully — we will not return to the hollow force of the 1970s, and we won't lower our standards or jeopardize quality of life for our people.



Although we in the Air Force certainly don't claim to have invented Quality of Life, we certainly became aware of what it means to our people and their families. Many folks, unfortunately, tend to think of it in terms of infrastructure — we know it is a direct contributor to readiness. These four charts — per capita spending on quality of life, MWR (morale, welfare and recreation), child development, and family support centers — aren't intended to compare Services. If they did, we'd look better only on the one showing spending on family support centers. What they are intended to show is that we're seeking consistency — comparatively, we've done a great job in prior years, and now we're intending to sustain what we've done. This is a great example of how we can get some important payoffs from intelligent investment in the right programs — the other Services are going to have to catch up and put more and more TOA into quality of life just to catch up — we'll use those additional resources for other things.

In summary, in the O & S area, we've tried to ensure the appropriate funding for the key readiness and sustainment areas, including quality of life, so that we're always ready to fight and win — readiness today is how we capitalize on yesterday's modernization/ investment decisions. The situation we're faced with today, however, is one where we have to start making some important investment decisions despite what seem to be increasing demands on our forces. The administration's initiative, earlier this year, to add \$25 billion to the readiness/quality of life accounts was

Quality of Life: Departmental Comparison ...Operating Today's Air Force While Investing in Tomorrow's



Operations and Support Summary

- The Air Force has made conscious decisions to restrict O&S funding to preserve investment
 - Readiness and sustainment have been priorities
 - Consistent Quality of Life investments
 - Force reshaping and installation closures realized economies
- AF O&S funding supports the BUR force structure
- Appropriate O&S funding to support modernized force structure



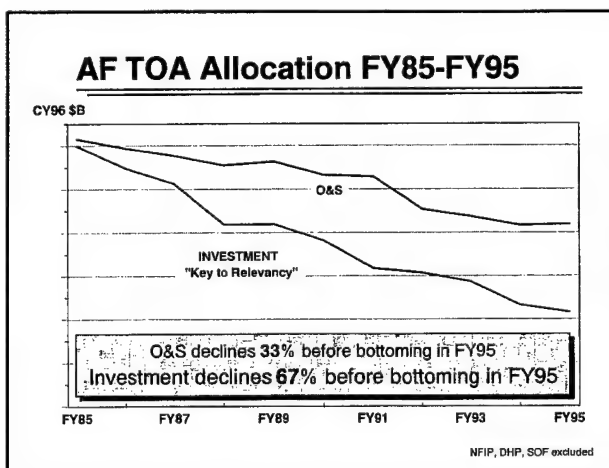
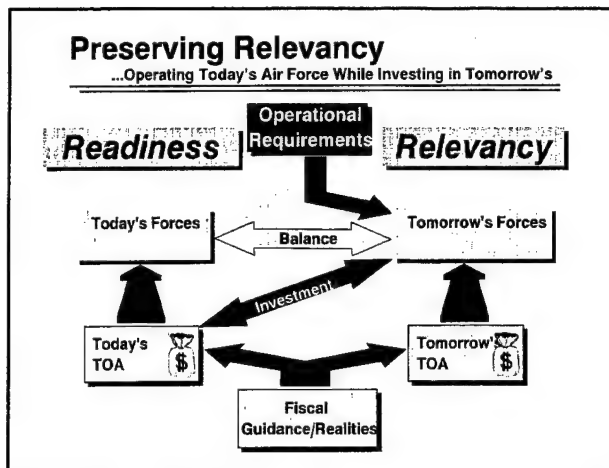
The Air Force is ready to fight and win today!

very timely—if we keep the budget as it's programmed now, we are ready. The challenge now is to build a force for tomorrow, so that our future leaders have a relevant force which can use tomorrow's readiness dollars effectively.

This slide is just a reminder about the balance we continually seek to achieve between readiness today and relevancy tomorrow. We're on the "razor's edge" now, and modernization is commanding a decreasing share of the budget. What follows will highlight some of the key issues and concerns and how we're dealing with them.

We can characterize our overall priorities as follows: in the near term, strategic lift modernization — with the mix of C-17s and the Non-development Airlift Aircraft (NDAA) to be determined in the November 1995 Defense Acquisition Board (DAB); in the mid-term, bomber upgrades, with emphasis on the conventional upgrades to the B-1 and the B-52; and, in the longer term, acquisition of the F-22.

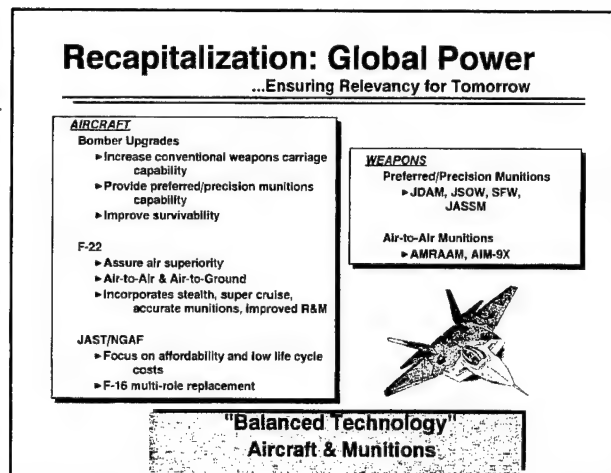
This slide clearly depicts the difference in the rates of decline in the O & S and Investment accounts. An investment account which has declined twice as fast as the O & S should cause us to study and think hard about our future. We cannot allow concern for today's readiness to mortgage our future. The investment account is critically important to us — we have to make sure we are striking the right balance as we move toward tomorrow's Air Force.



The next series of charts are tied to the *Global Reach, Global Power* vision and the core competencies we discussed earlier — they summarize our ongoing and programmed modernization efforts.

In the area of Power Projection, we're working four key areas which we think will provide the greatest leverage in combat: bomber upgrades designed to increase their conventional capabilities, with focus on munitions and survivability; the F-22, which will replace the F-15 and ensure air superiority well into the next century by incorporating major improvements in stealth, propulsion and reliability/ maintainability; the Joint Advanced Strike Fighter (also known as the Next Generation Attack Fighter, NGAF), designed to replace the F-16; and a family of accurate and more effective air-to-ground and air-to-air munitions.

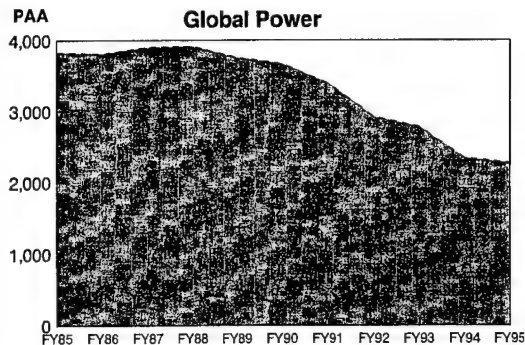
The cornerstone of our investment strategy here is to bring the weapons systems on line matched with advanced munitions, so we have a "balanced technology" approach to fielding equipment. These munitions will greatly enhance our ability to support the National Military Strategy with the BUR force. Most of these weapons will be operational by the year 2000. We plan to buy 442 F-22s at a maximum rate of 48 per year over about ten years, but recent budget cuts have caused us to slip the initial operational capability (IOC) to 2005. We expect NGAF to reach IOC in 2010, with a total buy for USAF alone of over 1,800 aircraft.



This chart shows the drawdown in number of fighter aircraft over the past decade. We will reach 20 Fighter Wing Equivalents in FY96. With the enhancements provided by precision munitions and other aircraft modifications, this is a force structure we can accept. Now, we need to make sure we do the things we need to do to sustain the 20 FWE force until we start bringing the F-22 and Next Generation Attack Fighter into the inventory.

FY96 PB Fighter Program

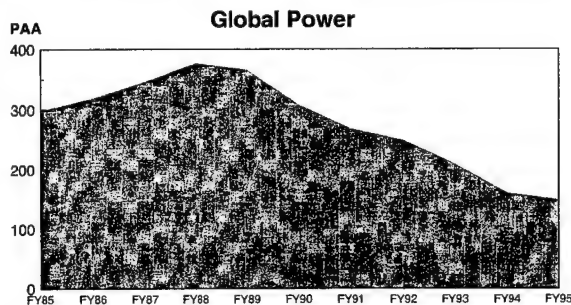
...Ensuring Relevancy for Tomorrow



In the bomber program, we can see basically the same trend. We've retired 140 B-52s since 1988; that force will stabilize at 66 aircraft with the retirement of 28 "H" models in FY96. The last B-2 will be delivered in FY00. In the meantime we will be concentrating on the Conventional Mission Upgrade Program for the B-1B, which, as you know, performed splendidly during its Operational Readiness Assessment last fall and will soon assume its place as the backbone of our bomber fleet.

Bomber Program

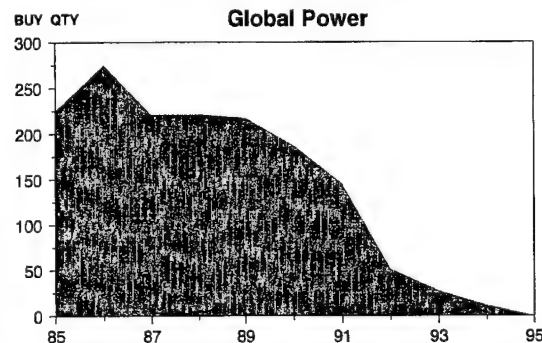
...Ensuring Relevancy for Tomorrow



This should be one of the most disturbing slides you'll see—in 1995 and 1996, for the first time in Air Force history, we are programmed to procure no fighters and no bombers. We've been fortunate to be able to exploit the investments of the mid-80s as we dramatically reduced the force, but now we have to turn that around. We need to buy some F-16s and F-15Es just to sustain that force structure until NGAF is available, but haven't found the resources to do it—our next programmed buys are F-22 EMD aircraft in FY98.

Procurement Profiles: Fighters & Bombers

...Ensuring Relevancy for Tomorrow



Our airlift and tanker modernization programs are shown on this slide. Certainly everyone is familiar with the issues revolving around the C-17/NDAA decision which will be made this fall to determine the final mix of aircraft types to replace the C-141. We'll finish the KC-135 reengining effort in FY97, and are working hard to complete installation of the Global Positioning System (GPS) on all the fleet by the year 2000. We're making some needed modifications to the C-130 electrical system and autopilot/ground collision avoidance systems, and have programmed to begin C-130J procurement to replace the older E-models beginning in FY96.

Almost everyone who's ever been in the strategic airlift business knows that we started out with a goal of being able to lift 66 Million Ton Miles Per Day (MTM/D) — that was a fiscally constrained goal based on a 1981 Congressionally Mandated Mobility Study. (For anyone who is new to ton-miles, take a ton, move it mile — that is a ton-mile.) Almost all of our mobility requirements use that as a convenient shorthand for the required capability, although the calculus is much more complicated because of the need to move outsize and oversize equipment in and out of sometimes austere locations). That goal has been reduced now to a range of 49 - 52 MTM/D following the Bottom Up Review Update. As you can see from the chart, the Civil Reserve Air Fleet (CRAF) makes up a significant portion of the capability (about 17 MTM/D). You can also see that our capability is finally beginning to converge with the require-

Recapitalization: Maintaining Global Reach ...Ensuring Relevancy for Tomorrow

C-17/NonDevelopmental Airlift Aircraft (NDAA)

- Replaces aging C-141 fleet
- Provides global airlift into the 21st century

KC-135 Reengining Program

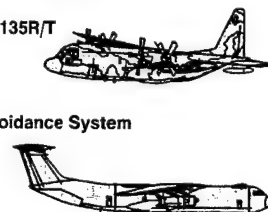
- Reengining 406 aircraft to KC-135R/T
- Complete in FY97

C-130 Upgrades

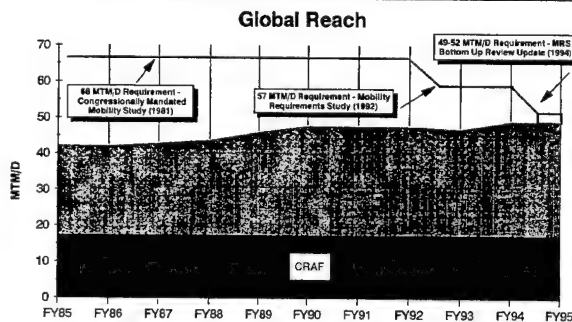
- C-130J acquisition
- Autopilot/Ground Collision Avoidance System
- Electrical system upgrades

All Aircraft

- Airlift Defensive Systems
- GPS integration



Strategic Airlift Program ...Ensuring Relevancy for Tomorrow



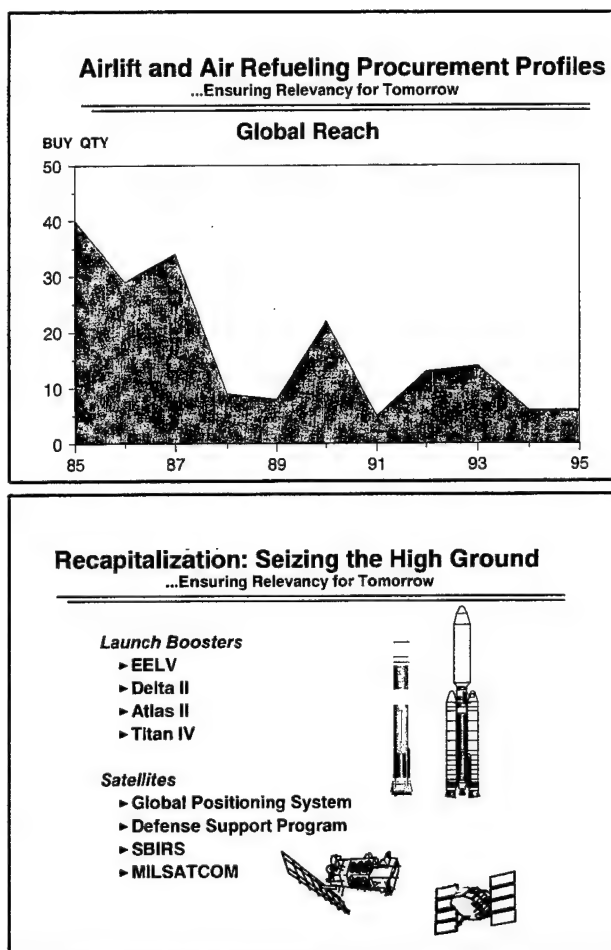
ment. The C-17 represents a tremendous increase in overall flexibility, also, because of its ability to operate from short fields and carry outsize and oversize cargo which the C-141 can not handle.

As is the case with fighters and bombers, programmed airlift and air refueling procurement has also fallen. Certainly, we could argue that our more capable, more effective systems allow us to have an effective, responsive fleet — and that is the target. There is however, a bottom to the procurement equation, and we think we're about there. These numbers will pick up a little once we have the C-17/NDAA decision and begin to add C-130Js to the force. We also will begin replacing the 89th Airlift Wing's VC-137 fleet later in the FYDP.

The Air Force, we think, has been perceived as the technology arm of the Department of Defense — it's one of our strengths and advantages, and has been ever since we captured the public's imagination with great advances in aircraft technology. Similarly, we're now recognizing the importance of space dominance and information warfare — these are two areas that are going to grow in importance and also compete, successfully I think, for an ever increasing share of our resources.

Each of the boosters listed on this chart is a complete system of capabilities, infrastructure, support and interfaces. We're continuing to improve the Titan IV, our heavy lifter, with a new upper stage and solid rocket motor upgrade, and will maintain launch capability at Vandenberg (AFB, Calif.) and Cape Canaveral. EELV, the Evolved Expendable Launch Vehicle, is one of our two new starts in the FY96 budget. It will modernize the fleet and also be compatible with a larger number of satellites — we hope to reduce our overall infrastructure investment by consolidating the entire Atlas, Delta and Titan class of vehicles when EELV comes on line.

We reach full operational capability with GPS this year and are making great strides in MILSATCOM. The first MILSTAR satellite is on orbit, and we



will continue to improve our capabilities with DSCS and Advanced MILSATCOM constellations. The Space-Based Infra-Red System (SBIRS) is the other new start in the FY96 budget — it will replace the Defense Support Program satellites beginning in FY02, vastly improving our ability to detect and track ballistic missiles, including tactical ballistic missiles. We are also working with the Department of Commerce on the National Polar Orbiting Environmental Sensing Satellite (NPOESS) as a follow-on to the Defense Meteorological Satellite Program (DMSP). We believe this dual use exploitation of space by both the civil and military sectors can help pave the way for greater cost-sharing to satisfy national requirements in the most efficient and economical manner.

The explosive growth in information processing is driving a serious reevaluation of the way we will fight wars of the future. We expect tremendous growth in the budget for everything associated with information dominance — surveillance, command and control, communications and computers, and counterinformation. Right now we're putting a lot of emphasis on JSTARS (Joint Surveillance and Target Attack Radar System), which was demonstrated so effectively during the Gulf War.

We will replace WWMCCS (Worldwide Military Command and Control System) with GCCS (Global Command and Control System) this fall. This will provide the warfighter with a fused, real-time picture of the battlespace and also mark a great step forward in jointness by integrating many of the disparate C² systems of each of the Services. JTIDS (Joint Tactical Information Distribution System) provides high capacity digital and voice information to a variety of users down to the tactical level, in secure and jam-resistant formats, so that we can get information to the shooters in near real time. The Defense Information Infrastructure will greatly facilitate information processing and transmission — it uses fiber optic cables, rather than copper, for instance — and will provide the speed and capacity needed to ensure the viability of our entire C⁴ system. We're installing cable at bases today, and have developed a long-range plan to complete all our bases, including deployable capabilities, in the next decade. We're also putting tremendous emphasis on strategies to protect our information networks while at the same time detecting, denying and exploiting, when appropriate, the hackers and other unauthorized users of our systems.

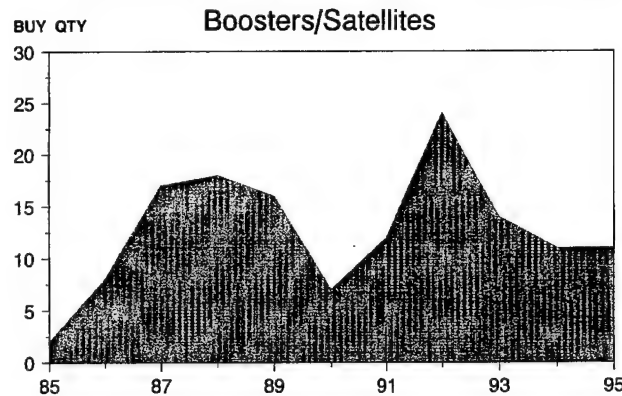
Recapitalization: Information Dominance
...Ensuring Relevancy for Tomorrow

- E-8 JSTARS
- Global Command and Control System
- Joint Tactical Information Distribution System
- Defense Information Infrastructure System

This slide shows a slightly different procurement trend than that for fighters, bombers and airlift aircraft. This is evidence that we take stewardship in space seriously. As I mentioned earlier, we expect this to continue grow-ing as we come to rely on space more and more to support our warfighters and provide key elements of theater and perhaps national missile defense systems.

Procurement Profiles: Space

...Ensuring Relevancy for Tomorrow



The trainer fleet is being modernized with three major procurement programs. JPATS (Joint Primary Aircraft Training System) will replace the T-37 as our primary jet trainer — we plan to procure 372 JPATS, beginning shortly after source selection this August, and the Navy plans a similar procurement. We're just finishing the buy of the T-1 to support Specialized Undergraduate Pilot Training — it is flown by those students designated to become tanker/transport pilots. The T-3 replaced the T-41, and has already paid big dividends in reducing attrition in the follow-on phases of flight training.

Recapitalization: Quality Training for Flyers

...Ensuring Relevancy for Tomorrow

■ JPATS

- Joint USAF/USN primary trainer
- Replaces 35 year old Air Force T-37 fleet and Navy T-45

■ T-1A

- Procurement completed in FY95
- Tanker/TTtransport training system to enable Specialized Undergraduate Pilot Training

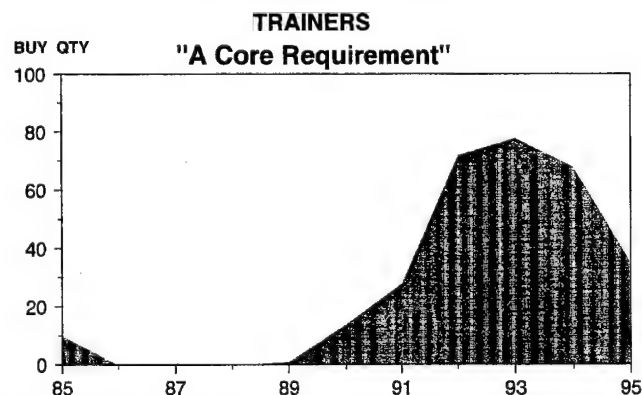
■ T-3A (Enhanced Flight Screener)

- Replacement for T-41 to improve screening
- Last procurement in FY94

This slide shows the quantities of trainers we've bought early in the 90s. This will bottom out now that we've finished buying the T-1, but will go up again once the JPATS procurement gets underway. What's not shown is our T-38 avionics modernization program, which will update the cockpit of the T-38 so that it is more like the advanced fighter and bomber cockpits which graduates of the program will fly.

Procurement Profiles: Trainers

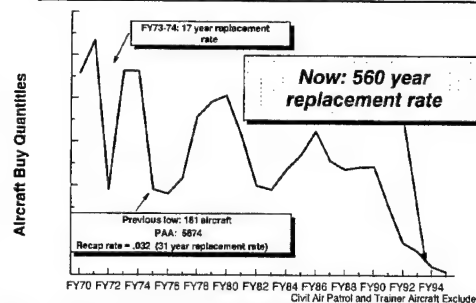
...Ensuring Relevancy for Tomorrow



In the 1970s we had a 17-year fighter aircraft replacement rate — in other words, we bought enough aircraft every year to recapitalize the force every 17 years. At today's rate, it will take us 560 years to recapitalize our fighter inventory. Obviously there isn't any sane person alive who thinks we're going to keep any airplane 560 years — we're good, but not that good. The good news is that by 2001, this gets better; the bad news is that in 2001, the recapitalization rate is still 128 years. That's something we need to keep talking about, because it's obviously not good enough either — it's not critical yet, but it's not sustainable — we quite simply need to start buying more fighters every year.

This is a bottom line: we're ready to fight and win today, but we're mightily concerned about the balance between readiness, force structure and modernization. We think we have a workable, reasonable plan for the near term. In a few years, we need to pick up the pace in procurement. We can't afford any more cuts, slips, or restructures in our modernization programs without severely jeopardizing future relevancy.

Aircraft Replacement Rate



Replacement Rate has increased to 560 years

Modernization Summary

- Modernization is the critical element of the Air Force's outyear support of the National Military Strategy
- USAF modernization program assumes prudent risk in the FYDP

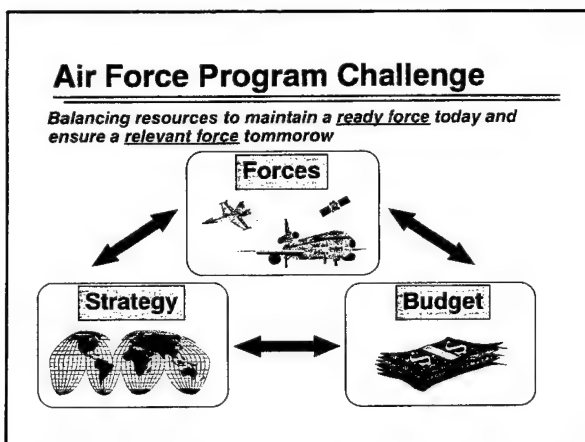
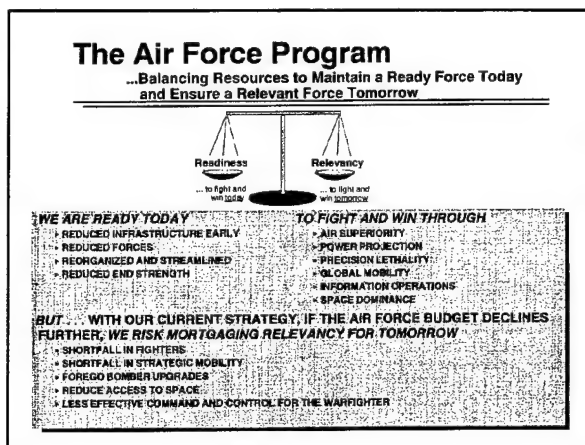


Any further reductions will put future relevancy at risk!

We have to retain the right balance between readiness today and relevancy tomorrow. Readiness is important, but if we don't draw the line in the sand, we risk mortgaging relevancy for tomorrow. If we don't really understand with certainty what it takes to create the world's best Air Force today and tomorrow, then we will have a shortfall in fighters, a shortfall in strategic mobility and other deficiencies which just can't be corrected overnight. We're ready today, but we cannot risk tomorrow's modernization, and tomorrow's relevancy, for today's readiness.

This is the bottom line: to maintain the right balance between readiness and relevancy, we must ensure balance between strategy, forces and budgets. A specific strategy demands certain forces and a certain budget to support it. If we're convinced that the force structure to support the strategy is right, then we budget for it. If we can't budget for it, then it's pretty evident that we have to change the strategy. The challenge for the programmer is to understand the balance between strategy, force structure and budget; to be ever mindful of who we are and what we are as a Service and as an institution; and ensure that we don't fall into the trap of constraining our core competencies rather than programming for them. We must be certain the force structure we say we need is the one that we truly need to support the strategy, and that we then fight for the dollars we need to make it happen.

I'd be glad to take any of your questions.



98 OPPORTUNITIES
AND
CHALLENGES IN
ACQUISITION
AND LOGISTICS

Major General John W. Handy
Director of Programs and Evaluation
HQ USAF

Question and Answer Session

GENERAL HATCH: *Thank you, John. That was an excellent presentation and you can be sure that if we can make copies of those slides, they will receive excellent distribution to tell that Air Force story. Four or five questions from our audience concern a perception that if by being first in line to downsize, reorganize and cut back, the Air Force is now paying the bills for the other Services. Do you agree with that premise, and if so what are we doing to counter it?*

MAJ. GEN. HANDY: That is a superb question, and I wish I had a nickel for every time I've been asked it in the past six weeks. As we try to characterize our efforts as an institution, we have to be very careful about measuring somebody else's characterization of their institution, and also to remember that we're a team within a team, part of a joint effort. I wouldn't defer the question, but my answer has to be much like we have discussed in this briefing: who are we as an institution? We need to take care of our part of that particular puzzle, and make sure we can deliver those things that we bring to the joint arena. In addition to that, we have the expectation that we should do all we can to make sure that the other components of DoD are equally capable.

That doesn't mean that I would argue that we should transfer TOA to the other Services, but that is not the issue. The real debate ought to be how well we're doing our job — I think we can be proud about

what we've done as an institution to create the service that we have.

GENERAL HATCH: *Thank you John. There is a specific question from our audience about the number of pilots in the Air Force today. We've cut back on, quoting your charts, from 154 to 92 wings. Do we have the right number of pilots and can we keep the cockpits filled?*

MAJ. GEN. HANDY: Certainly the Deputy Chief of Staff for Personnel is best qualified to answer that question — it is hotly debated and cyclical. All of us who have been in the Air Force any length of time know that we've gone from pilot surplus to pilot shortages more than once. We have pilots in the "bank" today, but we will exhaust that bank near the end of FY96. We're constantly reviewing the pilot force as well as the other career fields, and have significant programs to make sure we have the right numbers of folks for all the cockpits. I believe we have a good plan that gives us the right number of folks in all career fields for our Air Force.

GENERAL HATCH: *Thank you, General Handy. A few months ago, many people in this audience heard General Viccellio [General Henry Viccellio, Jr.] talk about the need to put more funds behind our recruiting efforts to get quality young people to enlist in the Air Force. Are you filling his needs with a little greater share for recruiting in the future?*

MAJ. GEN. HANDY: We have a line in the current FY97 POM that increases the investment in our recruiting efforts to make sure we do the things we need.

GENERAL HATCH: *Concerning base closure and your chart on O & S reductions, if the latest BRAC process is approved, do you think we are finished or will we have to close more bases in the future?*

MAJ. GEN. HANDY: As you know, the decisions for BRAC 95 haven't been finalized yet. Until they are, and we know where we are, it is difficult to predict where we'll need to go. Once the BRAC 95 results are announced, we'll know where we stand. There are many dynamics in the process. Once the President makes his announcement, in July, we will be able to answer that question more specifically.

GENERAL HATCH: *A member of the audience says new electronic combat systems appear to be a low Air Force priority. They say the Air Force is transferring ECM support to the Navy and some missile warning functions to the Army. How do electronic combat systems stack up for the future?*

MAJ. GEN. HANDY: We've discussed the concept of joint warfare several times during this briefing — that goes to the heart of this question. The Services are doing many things that are duplicative — some duplication is good, some is not. In electronic combat, we need to look at which Service has the best capability and capitalize on that. We are looking at transferring the EF-111 mission to the Navy's EA-6Bs, but if the question suggests the Air Force does not place priority on electronic combat, that is absolutely not the case. We are making significant upgrades to all of our aircraft avionics packages, to include upgrades to defensive systems for our bombers, airlifters, and fighters. We're not backing

away at all, but we recognize that as a "team within a team" we need to capitalize, efficiently if we can, on the abilities which other organizations bring to the joint warfighting arena.

GENERAL HATCH: *The Joint Requirements Oversight Council is run by the Vice Chairman of the Joint Chiefs and has entered more into the requirements area and the programming area than it has in years past. How do you work and interface with the increased activity of the JROC?*

MAJ. GEN. HANDY: The Air Force, like the other Services, is actively engaged in the JROC process, which continues to unfold and will improve as it matures. We think that the JROC will continue to become more influential in both requirements definition and programming to meet the requirements of the CINCs. The CINCs — the warfighters — have been saying they need a greater voice in determining the capabilities they need. The JROC is a vehicle for translating CINC concerns into programmatics so the Services are able to support them as required. It serves as a vehicle to provide meaningful inputs to the Chairman of the Joint Chiefs of Staff's program assessment and make recommendations on overall DoD funding priorities. It serves as a forum in which the individual Services can make their case for the importance of their programs, now and in the future, and to get joint "buy-in" about the types of capability we intend to provide.

The entire Air Staff is involved in the JROC, from action officer participation in each of the Joint Warfighting Capabilities Assessment (JWCA) teams, through Colonels who represent us in each JWCA, through the Director of Requirements, Brigadier General Dave McCloud, and the Vice Chief, General Moorman. We have an action officer from Programs and Evaluation respon-

sible for keeping me informed about JROC issues, and I interface on a personal basis with the J-8, Major General Ed Eberhart, who was formerly the Director of Programs and Evaluation. (General Eberhart has been promoted to Lieutenant General and assumed duties as the Air Force Deputy Chief of Staff for Plans and Operations.) We're convinced the Air Force message is being carried forward. There is open dialog in the JROC sessions. The bottom line is that we're developing a more joint force and spending dollars on the things we need to best develop our joint team. We don't always get exactly what we want, but on balance the JROC is doing what we need it to do for America.

GENERAL HATCH: *Thank you, General Handy. How do peacekeeping, nation building and disaster support enter into your program planning in terms of cost associated with those additional requirements?*

MAJ. GEN. HANDY: Traditionally the Services have not funded for contingencies, and we're not doing it right now. We don't know how many to program for, how long they will last, where they will be, or what our role will be in future contingencies, so we have no real good idea about how to program for them.

GENERAL HATCH: *Are there other joint programs that impact the declining TOA and help the Air Force by working programs together with the other Services?*

MAJ. GEN. HANDY: There are several. Two that come immediately to mind are JAST, the technology demonstrator for the Next Generation Attack Fighter, which is equally funded by the Air Force and the Navy, and the family of joint munitions, including JDAM (Joint Direct Attack Munition) and JSOW (Joint Standoff Weapon). The "J" is in the name of these programs for a very specific

reason. Those investment programs which are joint are the things that will clearly get the most attention in the years ahead — it's an efficient way to develop and acquire much needed capabilities. We're also in discussions with the Navy, and have proposed in our POM, an initiative to replace TSSAM (Tri-Service Standoff Attack Munition) with a similar or better capability. We're calling that JASSM (Joint Air-to-Surface Standoff Munition) because we both need the capability and it is definitive of how we intend to acquire in the future. We can't expect to go forward unilaterally as a Service on many programs and expect to get funding for what might well be unnecessarily duplicative programs.

GENERAL HATCH: *A final question for General Handy quotes General Fogleman's interest in more revolutionary planning for the future. Can you interpret that for us and what does the boss have in mind?*

MAJ. GEN. HANDY: I can't speak for the Chief, but this is certainly tied to the vision discussion we've had today. As you know, it is very difficult to create tomorrow's Air Force if you don't have a strategic, long range plan of some sort. One of the questions I asked of a lot of folks when I became the Director of Programs and Evaluation was directly related to this issue — what kind of force should we be programming for the future, and how far out can we plan? I think the Chief is trying to instill the idea of the importance of long range planning, strategic planning, throughout the staff — in some circles it is called revolutionary planning. I don't want to oversimplify it, but the concept means just knowing where you are headed in the future, not just in this FYDP, but in the next two or three FYDPs. It takes some serious thinking to project out 20 to 25 years into the future and predict the type of capabilities we'll need, then look back

and determine what technologies we need to be developing and what systems we should be bringing on line to support future strategies. Most importantly, we need to break away from the "sand chart" mentality we've seen for most of our lives that only continue more of the same things into the future. Revolutionary planning means breaking away, when necessary, from just modifying today's weapon systems and continuing to use them for the next 30 years. It involves innovative thinking like we're doing in the areas of information dominance and information warfare, where we're looking at today's capabilities (and vulnerabilities), then trying to go out into the future and predict what the environment is likely to be. Then we need to look at the ensuing technology and find those things we want to leap forward with and start investing in so that we're relevant and can contribute to shaping the environment of tomorrow, and help guarantee America's security in that environment.

GENERAL HATCH: *Thank you very much for being with us today, John. We appreciate all that you do, and we wish you every success.*

Ladies and gentlemen, this brings us to the close of this symposium. We have another symposium scheduled on the 26th of May in Colorado Springs. We will have acquisition and space systems on the calendar. If you are available during that week, we'd love to see you in Colorado Springs. On behalf of our President, Gene Smith, and the entire Air Force Association, our thanks to all of our speakers for their outstanding work and thanks to you for being with us. We stand adjourned.